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STATUS OF THE STRATEGIC PETROLEUM RESERVE

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

OF THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

NINETY-EIGHTH CONGRESS

FIRST SESSION

ON THE

STATUS OF THE STRATEGIC PETROLEUM RESERVE

MAY 6, 1983

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STATUS OF THE STRATEGIC PETROLEUM RESERVE

FRIDAY, MAY 6, 1983

U.S. SENATE,
SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10:25 a.m., in room SD–366, Dirksen Office Building, Hon. John W. Warner, presiding.

Present: Senators Warner, Hecht, Matsunaga, and Bradley.

Also present: Roger Sindelar, counsel; Benjamin S. Cooper, professional staff member for the minority; and James T. Bruce, counsel for the minority.

OPENING STATEMENT OF HON. JOHN W. WARNER, A U.S. SENATOR FROM THE STATE OF VIRGINIA

Senator WARNER. Forgive the tardiness but we are actively working on the floor to try to get a budget resolution.

Today the subcommittee begins another oversight hearing on one of America's vital first lines of defense in its energy arsenal—the Strategic Petroleum Reserve.

The SPR was created in 1975 with the enactment of the Energy Policy and Conservation Act. The creation came about because the interruption of petroleum supplies during the winter of 1973–74, the first Arab oil embargo, which demonstrated the need for an emergency storage program.

The Arab oil embargo was an enormous economic crisis in the United States. It caused severe economic imports on the U.S. economy and emphasized our vulnerability to interruptions in imports from major oil-exporting nations.

The repercussions of supply denial and price increases of the 1973–74 oil embargo indicated a loss of $35 to $45 billion in the gross national product and nearly a half million in jobs. A GNP loss of $10.2 billion is directly attributed to the embargo.

The Strategic Petroleum Reserve [SPR] program was begun to stabilize the national and international petroleum situation, one, to seek an economic impact eruption if one occurs; two, avoid undue pressure on either our domestic or foreign policy, as well as contributing to international stability through the International Energy Agency, and three, provide credible evidence that the United States will insulate its energy economy from major supply disruptions.

Congress recognized that the SPR should be regarded as a national security asset of paramount importance. But what has been the history of the SPR?

It is a history of starts and stops.

It is a history of confrontation.

Confrontation between foreign governments and the United States; confrontation within the executive branch; confrontation between the executive branch and Congress, confrontation within Congress, confrontation between public bodies and private groups.

In the past, its history has been one of failure, failure to meet and fill goals for a myriad of reasons; failure to be properly funded; failure to perform properly.

And finally, a failure to achieve the very goal for its existence, a failure to prevent economic disruption brought about by petroleum supply disruption from foreign producing countries.

I am going to submit the balance of my statement for the record because I am fearful that we will be called to the floor shortly.

[The prepared statement of Senator Warner follows:]

OPENING STATEMENT BY JOHN W. WARNER
AT THE OVERSIGHT HEARING ON THE STRATEGIC
PETROLEUM RESERVE - MAY 6, 1983
ROOM SD-366 - 10:00 A.M.

Today this Subcommittee begins another oversight hearing on one of America's vital first lines of defense in its energy arsenal -- the Strategic Petroleum Reserve.

The SPR was created in 1975 with the enactment of the Energy Policy and Conservation Act. Its creation came about because the interruption of petroleum supplies during the winter of 1973-74 from the 1st Arab - Oil Embargo demonstrated the need for an emergency storage program. The Arab oil embargo was an enormous economic crisis for the United States. It caused severe economic imports on the U.S. economy and emphasized our vulnerability to interruptions in imports from the major oil-exporting nations. The repercussions of supply denial and price increases of the 1973-1074 oil embargo indicated a loss of $35-45 billion in gross national product and 500,000 jobs. A GNP loss of $10.20 billion is directly attributed to the embargo.

The SPR program was begun to stabilize the national and international petroleum situation and

(1) reduce the economic impact of an interruption if one occurs,

(2) avoid undue pressures on either our domestic or foreign policy, as well as contributing to international stability through the International Energy Agency and

(3) provide credible evidence that the United States has the will to insulate its energy economy from major supply disruptions.

Congress recognized that the SPR should be regarded as a national security asset of paramount importance.

But what has been the history of the SPR.

It is a history of starts and stops.

It is a history of confrontation.

Confrontation between foreign governments and the United States. Confrontation within the Executive Branch. Confrontation between the Executive Branch and Congress, confrontation within

Congress and confrontation between public bodies and private groups.

In the past, its history has been one of failure.

Failure to meet and fill goals for a myriad of reasons.

Failure to be properly funded.

Failure to perform properly.

And finally, a failure to achieve the very goal for its existence -- a failure to prevent economic disruption brought about by petroleum supply disruption from foreign producing countries.

The Second Arab Oil Crisis found the SPR inadequate in volume, planning and execution to prevent new economic crisis from being invoked on the U.S.

One would have thought we would have learned from past experience -- but such was not to be.

The economic suffering was even greater than that of the first Arab oil crisis.

The resulting effect of this oil disruption crisis was felt world-wide as it brought on the worst economic recision since the great depression of the 1930's. It brought whole nation's to their economic senses and its effects will be one of the major topics of discussion at the upcoming Williamsburg Economic Summit.

At Williamsburg the world's leaders will be discussing how one can save the many countries bordering on economic disaster -- economic disaster brought about by the manipulation of energy supplies.

A manipulation that the SPR and like SPR's throughout the world should be able to blunt -- manipulation which an inadequate SPR was unable to prevent.

There has been a marked improvement in the SPR picture, though. Many of the problems have been substantially diminished.

The Reagan Administration is to be commended for its filling the SPR at a much greater fill level than in the past, resulting in 318 million barrels of oil in the SPR as of April 30, 1983.

But this fill level, coupled with a lowering of oil demand brought on by the world-wide depression, the lowering of oil prices because of oil glut and a large U.S. budgetary deficit has created a lull in the SPR program, a feeling that there is not the urgency to fill the SPR quickly as there has been in the past.

This lull has created the most recent confrontation.

Congress as late as last year in the Energy Emergency Preparedness Act mandated specific instructions to the Administration on the fill rate for SPR.

In the Administration's FY 83 they chose to ignore these instructions.

D.O.E. Secretary Hodel in a March 8 letter to Senator Jackson took a courageous position by advocating a higher SPR fill rate than the Administration's budget.

GAO has examined D.O.E.'s position and finds it to be correct.

Secretary Hodel in his letter asked for a meeting with the Senate to discuss this issue.

I am sorry to say that this meeting has never come about because of internal disagreement within the Administration on this issue. Thus what would have been a friendly resolution of this problem by dispassionate discussion has now been escalated into another unnecessary confrontation.

The General Accounting Office in praiseworthy, diligent efforts has monitored this situation under mandates of the Impoundment Control Act and found that D.O.E. has illegally impounded funds targeted for the SPR.

Yesterday GAO issued a deferral message to Congress which stated that an estimated $800 million in the SPR account will remain unobligated in fiscal year 1983. A copy of GAO's deferral message is attached to my statement and without objection will be made a part of the record.

The Administration held a Cabinet Council late yesterday evening to discuss this latest crisis. I will listen with

interest to the Administration witness to see if there is a result of the latest confrontation.

GAO's latest deferral message is before Congress.

Congress must act and act we will.

We have two choices.

Either accept or reject the deferral message.

At issue is the SPR fill rate.

On the one hand OMB is saying 220,000 3/D on the other hand is GAO advocating a fill rate of 288,000 barrels of oil per day. D.O.E.'s staff agrees with GAO based on current oil price assumptions.

At the heart of the issue is "what is the highest practicable fill rate" for the SPR.

The Senate Energy Committees staff has pursued this question with the Administration as has GAO with unsatisfactory results.

It was my hope that we could escape confrontation on this issue. We have failed.

This Committee must now act. We must decide on what the current SPR fill rate will be.

I believe it is safe to say that based on the evidence currently before this Committee that we will not accept OMB's 220,000 figure -- thus I anticipate a strong inclination on this Committee's part to reject the GAO deferral message.

However, I am not sure that we can accept GAO's figure of 288,000.

OMB has been unwilling to provide us with the information necessary to act reasonably and responsibly on this issue.

Accordingly by Thursday of next week I am requesting that the Administration report back to this Committee with a detailed memorandum of what they feel is the highest practicable fill rate of the SPR. In preparation of this document the Administration should be in contact with GAO and this Committee's staff and take into consideration the D.O.E. legal memorandum of March 8, 1983.

It is my hope that this request will resolve this issue in a responsible fashion and prevent good friends from being placed on opposite sides of the fence.

The SPR is needed, its insurance is needed now -- In the past its worth has been pointed to in the domestic side. I believe its worth is just as important on the international level.

Even more importantly the SPR presents an insurance package to this nation's national defense forces. The sooner the SPR is filled the less anxiety our national security forces have for adequacy of fuel supply.

In times of unrest this security blanket is of immeasurable value.

Senator WARNER. For our first witness, Mr. Boland, Senior Associate Director; Resources, Community and Economic Development, GAO.

STATEMENT OF F. KEVIN BOLAND, SENIOR ASSOCIATE DIRECTOR, RESOURCES, COMMUNITY AND ECONOMIC DEVELOPMENT DIVISION, GENERAL ACCOUNTING OFFICE, ACCOMPANIED BY DONALD FORCIER, SENIOR GROUP DIRECTOR; RICHARD PIERSON, ASSOCIATE GENERAL COUNSEL; AND CLIFFORD GARDNER, GROUP DIRECTOR

Mr. BOLAND. Thank you, Mr. Chairman.

We appreciate the opportunity——

Senator WARNER. Wait one moment. Do you have an opening statement, Senator?

Senator BRADLEY. No, I do not, Mr. Chairman. Thank you.

Senator WARNER. Thank you.

Mr. BOLAND. First I would like to introduce some people from GAO with me here today. On my right is Donald Forcier who is the Senior Group Director. On my immediate left is Richard Pierson who is the Associate General Counsel. On his left is Clifford Gardner who is a Group Director. All of them have worked very closely on the issues we are discussing today.

In the interest of time, Mr. Chairman, I would like to summarize my statement if that is satisfactory to you, and——

Senator WARNER. We will submit the whole statement for the record and accept those high points you establish.

Mr. BOLAND. Thank you.

We appreciate this opportunity to be here. We have followed the SPR program since its inception, and have issued numerous reports on matters affecting the reserve.

At the request of the full committee we report quarterly on SPR activities and have recently completed a series of reports that evaluated administration documents submitted to the Congress under the Energy Emergency Preparedness Act of 1982.

My testimony today is based primarily on that work. It will focus on the fiscal year 1983 fill rate and the administration's budget request for fiscal year 1984.

In addition, I would like to comment on some concerns we have about the adequacy of the administration's plan for using the SPR and other aspects of the administration's energy emergency preparedness program.

Before making some brief comments, however, I would like to emphasize the importance we place on the SPR to the Nation's ability to respond to an energy emergency.

The SPR is the cornerstone of the administration's energy emergency preparedness program and, in fact, it is virtually the only major mechanism presently available to deal with energy supply disruptions.

The administration has made good progress in filling the SPR. Of the 318 million barrels of oil in SPR as of April 30, 1983, about 70 percent was added during the past 2 years. As of April 30, 1983, the

fill rate has averaged about 188,000 barrels per day for fiscal year 1983. However, the Department of Energy plans to average 220,000 barrels per day for the entire fiscal year.

DOE currently has funds available which would enable it to reach an even higher fill rate for the fiscal year. We calculate that available funds could allow for a fill rate of about 288,000 barrels per day. However, because of budgetary concerns and the improved energy supply situation, the administration would prefer to keep the average fill rate at 220,000 barrels per day for fiscal year 1983, with even lower levels in subsequent years.

The 1984 budget submission calls for fill rates of 145,000 barrels per day in fiscal year 1984, and 100,000 barrels per day in subsequent years. There are several concerns regarding the SPR fill rates that I would like to briefly discuss.

These concerns include DOE's deferral of fiscal year 1983 funds, which we reported yesterday under the Impoundment Control Act, and the effects of the administration's proposal to lower the fill rate in fiscal year 1984 and subsequent years.

As you know, the Energy Emergency Preparedness Act requires a minimum average fill rate of at least 300,000 barrels a day until there are 500 million barrels in the reserve. However, the act allows a lower fill rate if the President finds that the 300,000 barrell-per-day rate would not be in the national interest for a particular fiscal year. On December 1, 1982, the President made such a finding for fiscal year 1983 and with the finding, the act requires a minimum fill rate of at least 220,000 barrels a day, or the highest practicable fill rate achievable with available funds.

DOE and the Office of Management and Budget have interpreted the act's requirements differently. DOE views the act as requiring all funds available, the $2.1 billion appropriated for fiscal year 1983, and $2.4 billion carried over from prior years, to be used to determine what is available for achieving the highest practicable fill rate. In DOE's view, the term practicable gives DOE discretion to decide not to buy oil at prices which needlessly increase the cost of the SPR oil.

OMB on the other hand believes that funds carried over from prior fiscal years should not be counted in determining the fiscal year 1983 fill rate requirement. OMB believes that the planned 220,000 barrels per day fill rate is in compliance with the act.

Mr. Chairman, we agree with DOE's position that all unexpended current and prior year balances should be considered as available funds for purposes of calculating the highest practicable fill rate. We recognize, however, that factors relating to prudent management may be taken into account when determining what fill rate is practicable. Accordingly, we have reported to the Congress a deferral under the Impoundment Control Act of $800 million of funds in the SPR petroleum account.

In deciding whether to take action on the deferral, Congress needs to consider several important questions: First, could DOE increase the fill rate to 288,000 barrels a day in this fiscal year? Second, do the benefits outweigh the cost associated with the higher rate?

Our discussions with DOE and the Defense Fuel Supply Center, DOE's purchasing agent for much of the SPR oil, indicate that it

may be possible to achieve the higher rate for the fiscal year. However, to do so, DOE would have to overcome several significant constraints involving oil purchases and storage requirements. In this regard, fill rate actions need to be taken very soon.

An early decision by the Congress on the deferral is needed so that sufficient time will be available to acquire the interim storage and the additional oil. DOE believes it will take about 90 days to acquire interim storage and the Defense Fuel Supply Agency says it needs at least 30 days to arrange for oil deliveries. If the additional oil is to be delivered in the fourth quarter, DFSC would need to begin ordering in early June.

In making the decision on whether to overturn the deferral, a number of factors should be considered. Briefly, these factors include the impact on the SPR inventory, the time saved in increasing that inventory, the cost associated with the higher rate, and the potential impact on the fiscal year 1984 appropriation level. A decision on overturning the deferral will involve some difficult trade-offs. We outline some of these in detail in the statement.

The SPR inventory can be increased in less time but additional costs may be incurred to store the oil in interim storage facilities. These costs may be increased or decreased depending on future oil prices. Also the timing of the deferral impacts on the likelihood of a higher rate actually being achieved.

Let me turn to the administration's fiscal year 1984 budget proposal. The administration's budget proposal suggests reducing the fill rate to 145,000 barrels a day in fiscal year 1984 and to 100,000 barrels per day in fiscal years 1985 and 1986.

The proposed fill rate would be considerably lower than the fill rates set forth in the Energy Emergency Preparedness Act, further delay reaching the 500-million-barrel goal——

Senator WARNER. We are on our second call for the floor vote and as such Senator Bradley and I are going to ask you to forebear your testimony until such time as Senator Hecht returns.

Mr. BOLAND. I understand, Mr. Chairman.

Senator WARNER. We asked you for the purpose of others in attendance to lead off as a witness today because of your deferral message and by giving Secretary Vaughan an adequate opportunity to hear carefully.

Mr. BOLAND. We appreciate that, Mr. Chairman.

[Whereupon, a brief recess was taken.]

Senator HECHT [presiding]. We will continue where we left off, OK? Thank you.

Mr. BOLAND. I think I might be able to shorten this even further by getting to the bottom line which I have recapped in my formal statement.

The first major point is that the deferral of funds which we reported gives Congress the opportunity to require a fill rate of 288,000 barrels per day in fiscal year 1983.

In making a decision on the deferral, Congress should consider the impact of that fill rate on the SPR inventory, the time saved in reaching the 500-million-barrel level, the associated costs, and the need for fiscal year 1984 appropriations.

The administration's fiscal year 1984 budget proposal recommends reducing the fill rate for fiscal year 1984 and beyond. Decisions on the fiscal year 1984 appropriations should consider the administration's justifications for the reduced fill rates as well as their effects on the time needed to reach the 500-million-barrel level, the impact on the drawdown capability, the amount of unused permanent storage capacity, and the implications of not meeting the fill rate contemplated by Congress in passing the Energy Emergency Preparedness Act.

A decision is also needed on the level of fiscal year 1984 appropriations for the new Big Hill site. This will provide an indication of the intent of the Congress on the future development and fill schedule for the SPR.

Finally, the status of the SPR program should be viewed in the context of the Nation's overall preparedness for oil emergencies. We have found in our work numerous implementation problems and a general lack of preparedness in many areas.

Mr. Chairman, we would be happy to respond to any questions.

[The prepared statement of Mr. Boland follows:]

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

For Release at 10:00a.m.
May 6, 1983

STATEMENT OF
F. KEVIN BOLAND
SENIOR ASSOCIATE DIRECTOR
RESOURCES, COMMUNITY AND ECONOMIC
DEVELOPMENT DIVISION
BEFORE THE
SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES
SENATE COMMITTEE ON ENERGY AND
NATURAL RESOURCES
ON THE STRATEGIC PETROLEUM RESERVE

Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to be here today to discuss issues relating to the Strategic Petroleum Reserve (SPR). We have followed the SPR program since its inception and have issued numerous reports on matters affecting the Reserve. At the request of the full Committee, we report quarterly on SPR activities. Also, we recently completed a series of reports that evaluated administration documents submitted to the Congress under the Energy Emergency Preparedness Act of 1982.

My testimony today is based primarily on this work and focuses on the SPR's fiscal year 1983 fill rate and the administration's budget request for fiscal year 1984. In addition, I will comment on the concerns we have about the adequacy of the administration's plan for using the SPR and other aspects of the administration's energy emergency preparedness program.

First, however, I would like to emphasize the importance of the SPR to the Nation's ability to respond to energy emergencies. The SPR is the cornerstone of the administration's energy emergency preparedness program; and, in fact, is virtually the only major mechanism presently available to deal with an energy supply disruption.

STATUS OF SPR AND FILL RATES PLANNED

The administration has made good progress in filling the SPR. Of the 318 million barrels of oil in the SPR as of April 30, 1983, about 70 percent was added during the past 2 years. As of April 30, the fiscal year 1983 fill rate has averaged 188 thousand barrels per day (MBD) and the Department of Energy (DOE) plans to average 220 MBD for the entire fiscal year. This will require increasing the average daily fill rate to about 265 MBD during the remaining five months of the fiscal year.

DOE currently has funds available which could enable it to reach an even higher average fill rate for the fiscal year--about 288 MBD. However, because of budgetary concerns and the improved energy supply situation, the administration would prefer to keep the average fill rate at 220 MBD for fiscal year 1983 with even lower levels in subsequent years. The 1984 budget submission calls for fill rates of 145 MBD in fiscal year 1984 and 100 MBD in subsequent years.

There are several issues concerning the fill rate plans that I would like to discuss in more detail. First, we have reported a deferral under the Impoundment Control Act. Second, I will discuss the effects of the administration's proposal to lower the fill rates in fiscal year 1984 and subsequent years.

DEFERRAL OF OIL ACQUISITION FUNDS

The Energy Emergency Preparedness Act requires a minimum average annual fill rate of at least 300 MBD until there are 500 million barrels in the Reserve. However, the act allows a lower fill rate if the President finds that the 300 MBD rate would not be in the national interest for a particular fiscal year. On

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December 1, 1982, the President made such a finding for fiscal year 1983. With the finding, the act requires a minimum fill rate of at least 220 MBD, or the highest practicable fill rate achievable with available funds.

The act's clause "* * *the highest practicable fill rate achievable, subject to the availability of appropriated funds" has caused some confusion over the minimum fill rate required by the act for fiscal year 1983. DOE and the Office of Management and Budget (OMB) have interpreted the act's requirements differently. DOE views the act to require that all funds available--the $2.1 billion appropriated for fiscal year 1983 and $2.4 billion carried over from prior years--be used to determine what is available for achieving the highest practicable fill rate. In DOE's view, the term "practicable" gives DOE discretion to decide not to buy oil at prices which needlessly increase the cost of SPR oil. At prices DOE is currently paying, the $4.5 billion could support a fiscal year 1983 fill rate of about 288 MBD and cover advance purchases for the first 6 months of fiscal year 1984. However, DOE believes that the highest practicable fill rate may be lower than 288 MBD.

OMB, on the other hand, believes that funds carried over from prior fiscal years should not be counted in determining the fiscal year 1983 fill rate requirement. OMB believes that the planned 220 MBD fill rate is in compliance with the act.

We agree with DOE's position that all unexpended current and prior year balances should be considered as available funds for purposes of calculating the highest practicable fill rate. We recognize, however, that factors relating to prudent

management may be taken into account when determining what fill rate is practicable.

Accordingly, we are reporting to the Congress a deferral under the Impoundment Control Act of $800 million of funds in the SPR Petroleum Account. Our estimate of the amount deferred is based on our calculation of the amount that will not be used if DOE limits the average fill rate for fiscal year 1983 to 220 MBD and carries out current plans to enter into contracts for oil delivery in the first 6 months of fiscal year 1984. If the deferral is disapproved by one House of Congress, DOE would be required to use all the available funds to fill the SPR. As I indicated earlier, we estimate that, at current prices, available SPR funds would support a fiscal year 1983 fill rate of about 288 MBD.

In deciding whether to take action on the deferral, Congress needs to consider several important questions. First could DOE increase the fill rate to 288 MBD in this fiscal year? Second, do the benefits outweigh the costs associated with the higher rate?

Our discussions with DOE and the Defense Fuel Supply Center (DFSC), DOE's purchasing agent for much of the SPR oil, indicate that it may be possible to achieve the 288 MBD fill rate for the fiscal year. However, to do so, DOE would have to overcome several significant constraints involving oil purchases and storage requirements.

Constraints to meeting the 288 MBD fill rate

The most significant constraint stems from the need to acquire private interim storage capacity. By the end of fiscal

year 1983, DOE expects to have about 362.1 million barrels of storage capacity available at the SPR sites. This would be about 21 million barrels less than needed to accomodate a 288 MBD average fill rate. Consequently, DOE would have to acquire private interim storage capacity. DOE has estimated that it would cost up to $90 million per year to store this oil and that the oil may have to be stored for 2 years. Also, DOE program officials believe that the contracting process to acquire such storage could take at least 90 days and it would have to begin almost immediately to allow time for oil deliveries to these facilities in the last quarter of fiscal year 1983. DOE has prepared but has not issued the Invitation for Bids for the additional storage capacity.

Another potential constraint is that DOE would need to substantially accelerate the last quarter fill rate--to about 497 MBD--to reach 288 MBD year-end average. Filling at this rate would require purchases of an additional 25 million barrels of oil during the last quarter of the year and would increase the chance that logistical problems might occur. According to DFSC, its ability to purchase this quantity of oil depends on the amount of advance notice provided by DOE and on the amount of oil offered by suppliers in the solicitation process. DFSC said it needs about 30 days to arrange oil deliveries. In addition, unless oil companies or traders offer to sell the required quantities of oil at prices that DFSC considers to be reasonable, DFSC may not be able to buy the oil. DFSC is constrained to some extent in purchasing oil by provisions of the Energy Policy and Conservation Act that call for SPR oil to be acquired in a

manner that minimizes the cost of the SPR and the impact on the oil market.

In summary, in order to meet the 288 MBD fill rate actions need to be taken very soon. Also, an early decision by the Congress on this deferral is needed so that sufficient time will be available to acquire the additional oil. As I mentioned earlier, DOE believes it will take about 90 days to acquire interim storage and DPSC says it needs at least 30 days to arrange for oil deliveries. If the additional oil is to be delivered in the fourth quarter, DPSC would need to begin ordering in early June.

Factors to Consider Regarding the Deferral

In making the decision on whether to overturn the deferral a number of factors should be considered. These factors include the impact on SPR inventory, the time saved in increasing the SPR inventory, the costs associated with the higher rate, and the potential impact on the fiscal year 1984 appropriation level.

Filling at 288 MBD in fiscal year 1983 would add about 25 million barrels to the Reserve by year end. This would provide an additional 15 days of oil at the SPR's current 1.7-million-barrel per day drawdown capability.

The effects of this higher fill rate on the SPR completion schedule depends on future fill rates. For example, a 288 MBD fill rate in fiscal year 1983 will achieve a 383 million barrel inventory 4 months earlier than filling the reserve at a constant rate of 220 MBD. The higher fill rate will also reach the 383 million barrel level 6 months earlier than if the fiscal

year 1983 fill rate is held to 220 MBD and the fiscal year 1984 fill rate is limited to the administration's 145 MBD rate.

Another factor to be considered is the costs asociated with the 288 MBD fill rate. This rate could require DOE to spend about $75 million to $90 million during the next year for private interim storage capacity. In addition, if the fiscal year 1984 fill rate is 220 MBD or higher, it would be necessary to keep the oil in the interim storage facilities for an additional year since the available storage capacity at the SPR sites planned for fiscal year 1984 could accomodate only up to a 220 MBD fill rate. An additional factor to consider, which could be either an advantage or disadvantage, is the cost of the additional oil purchased at the 288 MBD rate. If oil prices rise, then the amount paid for this oil would be less than what it would cost in the future. Alternatively if prices drop, the price paid for the additional oil would be higher.

The final factor to be considered that I would like to discuss, Mr. Chairman, is the fact that if available funds are used this year to achieve the 288 MBD rate, the Congress would need to appropriate additional funds for fiscal year 1984 oil purchases.

As can be seen, a decision on overturning the deferral will involve some difficult tradeoffs. The SPR inventory can be increased in less time, but additional cost may be incurred to store the oil in interim storage facilities. These costs may be increased or decreased depending on future oil prices. As mentioned earlier, the timing of a decision on the deferral also

impacts on the likelihood of the higher rate actually being achieved.

Let me now turn to the administration's fiscal year 1984 budget proposal.

ADMINISTRATION'S PROPOSAL TO REDUCE THE SPR FILL RATE FOR FISCAL YEAR 1984 AND BEYOND

The administration's fiscal year 1984 SPR budget proposes reducing the fill rate to 145 MBD in fiscal year 1984 and to 100 MBD in fiscal years 1985 and 1986. The justifications the administration cited for the reduced oil fill rates are that it is necessary to restrain Federal spending to the maximum extent possible because of the economic problems that face the Nation and, considering the status of the SPR and the world oil market, the Nation is not as vulnerable to supply interruptions. In deciding on this proposal, in addition to considering the administration's justification, it may be useful to consider some of the other effects of the proposal. The proposed fill rates would (1) be considerably lower than the fill rates set forth in the Energy Emergency Preparedness Act, (2) further delay reaching the 500-million-barrel goal of the act, (3) impact on the withdrawal capability of the SPR, and (4) result in not using all available permanent storage capacity.

The fill rates proposed by the administration are significantly lower than those envisioned by the Congress in passing the Energy Emergency Preparedness Act. As discussed previously, the act requires a minimum average annual fill rate of at least

300 MBD unless the President finds that this rate is not in the national interest. In such cases, the minimum fill rate becomes 220 MBD or the highest practicable rate achievable with available funds. The proposed 145 MBD fill rate for fiscal year 1984 is less than half of the 300 MBD rate and the proposed 100 MBD rate in fiscal year 1985 and 1986 is about one-third of the 300 MBD rate.

The fill rates proposed by the administration would extend the time needed to achieve a 500-million-barrel reserve by about 2 years. In establishing the minimum fill rate requirements of the Energy Emergency Preparedness Act, the Congress demonstrated the importance it attached to filling the SPR to a minimum 500-million-barrel level. Increasing the fill rate to 300 MBD after fiscal year 1983 would allow this goal to be reached by January 1985. Maintaining the post-fiscal year 1983 fill rate at 220 MBD would delay reaching this target by about 6 months, until July 1985. The administration's proposed fill rates of 145 MBD in fiscal year 1984 and 100 MBD thereafter would delay reaching this goal by more than 2 years until March 1987.

The fill rates proposed by the administration also delay DOE's ability to increase the withdrawal capability for the SPR. Currently, the SPR can be withdrawn at a rate of 1.7 million barrels per day for about 4 months when the drawdown rate would gradually decrease before being exhausted about 5 months later. A 500-million-barrel Reserve could be drawdown at a rate of 3.5 million barrels per day for 3 months and at a declining rate for another 3 months. Although the larger

Reserve would be exhausted sooner at the maximum drawdown rate, it allows more flexibility to match the drawdown rate to the Nation's needs in the event of a supply disruption. This underscores the value of a larger Reserve size.

Finally, the lower fill rates proposed by the administration would not fill all of the permanent storage capacity available. Unused permanent storage capacity could grow from over 16 million barrels in fiscal year 1984 to about 54 million barrels in fiscal year 1986. In addition to permanent storage capacity, DOE recently determined that it may be able to temporarily store an additional 17.9 million barrels at the SPR sites by the end of fiscal year 1984. This additional temporary storage capacity also would be unused at the proposed fill rates.

Fiscal Year 1984 Funding Decisions Needed on Big Hill Development

In addition to a decision on the SPR fiscal year 1983 fill rate, the Congress needs to address the future development schedule and the fiscal year 1984 appropriations level for the new Big Hill storage site. DOE previously planned to begin storing oil at the Big Hill site in fiscal year 1986 and to complete filling the 140-million-barrel site in fiscal year 1989. This would complete the 750-million-barrel SPR. If this schedule is to be met, construction needs to begin in fiscal year 1984. However, the administration has proposed delaying development of the Big Hill site. It reported a deferral of fiscal year 1983 funds and did not request construction funds for fiscal year 1984. In March 1983, Congress indicated its commitment to completing the 750-million-barrel SPR by overturning the administration's deferral.

The future development schedule of the Big Hill site and the timing of the completion of the 750-million-barrel SPR will be impacted by the congressional decision on the fiscal year 1984 budget. DOE has estimated that about $360 million in additional appropriations would be needed in fiscal year 1984 to get the Big Hill site back on schedule.

I would now like to turn your attention to our concerns about the adequacy of the administration's plans to use the SPR and other aspects of its energy emergency preparedness program.

SPR DRAWDOWN PLANNING

In the final analysis of course, the entire SPR program will be only as effective as our ability to drawdown the stocks in a timely and effective way. The Energy Emergency Preparedness Act required the administration to submit its plans for the use of SPR stocks to the Congress to December 1982. The act stipulated that the Drawdown Plan should provide information about alternative SPR use strategies under different disruption scenarios. In a January 1983 report to the full Committee, in which we evaluated the drawdown plan, we noted that it provided little specific information about the conditions under which the SPR could be used. This includes the amount, rate, and timing of its use.

The degree to which the SPR could be effective during a disruption depends on a number of variables. For example, it could be more or less effective depending on the status of factors such as: oil inventory levels at the time of the disruption, production/consumption patterns, price movements during

a disruption, and other nations' stock levels and stock use policies. There is little evidence that the administration is incorporating these important factors in its SPR use policy.

More thorough advance planning could be very important to the Government's ability to act quickly during a disruption. It could also help reduce panic buying by assuring the oil industry and consumers that the reserve is available for use if necessary. Panic buying has been shown to be a principal cause of price increases in past disruptions. Better planning could also allow the Government to more easily coordinate stock drawdown with our allies, and it could help to deter oil embargoes against the United States by demonstrating our ability to counteract them.

Overall Preparedness for Oil Emergencies

Finally, Mr. Chairman, the status of the SPR program should be viewed in the context of our overall preparedness for oil emergencies. While the SPR is the cornerstone, the administration has indicated its intention to act on other fronts during a disruption. Our latest evaluation of the status of all emergency preparedness programs was made in a report to the full committee in February of this year. While I won't go into these findings in this testimony unless the Subcommittee has specific questions, I will note that we found numerous implementation problems and a general lack of preparedness in many areas. This included areas such as the Executive Manpower Reserve, the role of private oil stocks, and potential conflicts between Federal and State regulations for dealing with disruptions.

In closing, I would like to summarize the major points I raised today:

--The deferral of funds which we reported gives Congress the opportunity to require a fill rate of 288 MBD in fiscal year 1983.

--In making a decision on the deferral, Congress should consider the impact of the 288 MBD fill rate, which disapproval of the deferral could allow, on the SPR inventory, the time saved in reaching the 500-million-barrel level, the associated costs and the need for fiscal year 1984 appropriations.

--The administration's fiscal year 1984 budget proposal recommends reducing the fill rate for fiscal year 1984 and beyond.

--Decisions on fiscal year 1984 appropriations should consider the administration's justifications for the reduced fill rates as well as their effects on the time needed to reach the 500-million-barrel level, the impact on the drawdown capability, the amount of unused permanent storage capacity, and the implications of not meeting the fill rates contemplated by Congress in passing the Energy Emergency Preparedness Act.

--A decision is also needed on the levels of fiscal year 1984 appropriations for the new Big Hill site. This will provide an indication of the intent of the Congress on the future development and fill schedule for the SPR.

--The status of the SPR program should be viewed in the context of the Nation's overall preparedness for oil emergencies. However, we have found numerous implementation problems and a general lack of preparedness in many areas.

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That concludes my prepared statement, I would be happy to respond to any questions.

Senator HECHT. Thank you very much.

Mr. Vaughan?

No questions at this time. We will wait. We will go through the whole panel.

Oh, it is not a panel. I'm sorry. OK.

I see a few questions here from Senator Warner which I will ask for the record and you can answer them, OK?

Mr. BOLAND. OK.

Senator HECHT. A fill level of 288,000 barrels per day you have indicated DOE could fiscally do would call for interim storage. DOE claims that interim storage is an unreasonable expense.

What is your opinion on the use of interim storage?

Mr. BOLAND. I would answer it this way, Mr. Chairman. It is a question of time and cost. Obviously, time can be saved by accelerating the fill rate higher than 220,000 barrels a day, but cost would be incurred since it would require interim storage.

It is a matter of how much the Congress is interested in cutting the time before completion of a 500-million-barrel reserve. If we filled the SPR at 300,000 barrels per day, which is the ceiling set in the law, we would reach the 500-million-barrel level 2 years sooner than under the administration's proposed fill rate.

If you fill at 220,000 barrels a day, you would cut that 2 years to 1. So you could cut 1 year off the time required to reach 500 million barrels by filling at 220,000 barrels a day rather than the administration's proposed rate. Between these two rates, you have other options available which would mean filling at a higher rate than proposed by the administration. However, higher rates may require buying interim storage.

So interim storage could be required to fill the SPR faster. For example, the difference between 220,000 and 288,000 barrels a day might buy you 4 months' time. However, it could cost you between $75 and $90 million per year for interim storage.

I guess those are my views on it. The cost of interim storage and the amont of time saved are two factors that have to be considered.

Senator HECHT. You mentioned a 500-million-barrel reserve, yet the SPR plan speaks of a 750-million-barrel reserve. Could you explain the seemingly contradiction between these two figures?

Mr. BOLAND. Well, to begin with, the SPR program is broken down into stages. Phase II, when complete, would result in a reserve totalling about 610 million barrels. Phase III, which would require the Big Hill site, as I mentioned in my testimony, adds another 140 million barrels to that, for a total of 750 million.

My focus was on the 500 million barrels because I think that is where the Congress has been focusing their attention for the short term as it relates to the fill rate requirements of the Energy Emergency Preparedness Act. That act placed required minimum fill rates on the SPR program until at least 500 million barrels are stored.

Senator HECHT. Is there a middle ground fill rate between 220,000 of OMB and 288,000 barrels a day on the SPR fill rate?

Mr. BOLAND. My guess is, in all situations like this, there is opportunity for a middle ground. From the standpoint of our deferral message, we are saying that there is enough money available to support

288,000 barrels a day. However, the Department of Energy would prefer to fill at less than that amount. Whether you accommodate that, depends on how you view the program and how you define a practicable fill rate. You may accommodate a lower fill rate depending on your views.

Senator HECHT. There will be other questions later to be asked of you. At the advice of counsel, we will adjourn till the rest of them come back.

[A brief recess was taken.]

Senator WARNER [presiding]. We ask again forgiveness from the witnesses and others in attendance this morning. There is a very important matter on the floor which requires our attention.

Now, as I understand, Mr. Boland, we have propounded the questions that I had and we are ready now to proceed with Mr. Boland. Is that correct? I will just wait a minute till my colleagues—Senator Matsunaga, would you have questions?

Senator MATSUNAGA. Not at this time.

Senator WARNER. Fine. Thank you very much. We will now hear from Mr. William A. Vaughan, Department of Energy, Assistant Secretary for Environmental Protection, Safety and Emergency Preparedness. Mr. Boland, there may be some questions from the minority which we will provide you with and then ask the response be in the record.

Mr. Secretary, we are pleased to see you again. You have been on the firing line of this issue for some time.

STATEMENT OF WILLIAM A. VAUGHAN, ASSISTANT SECRETARY FOR ENVIRONMENTAL PROTECTION, SAFETY AND EMERGENCY PREPAREDNESS, DEPARTMENT OF ENERGY, ACCOMPANIED BY RICHARD A. FURIGA, DEPUTY ASSISTANT SECRETARY FOR THE STRATEGIC PETROLEUM RESERVE; AND RONALD L. WINKLER, DEPUTY ASSISTANT SECRETARY FOR ENERGY EMERGENCIES

Mr. VAUGHAN. Mr. Chairman and members of the subcommittee, it is my pleasure to appear before you today to discuss the Strategic Petroleum Reserve. I am accompanied this morning by Mr. Richard D. Furiga, the deputy assistant secretary for the Strategic Petroleum Reserve to my right, your left; and Mr. Ronald L. Winkler, the deputy assistant secretary for energy emergencies, to my left, your right.

I have a more detailed prepared statement that I request be entered into the record and I will proceed with this summary, oral statement at this moment.

The Strategic Petroleum Reserve is a very important part of our energy emergency preparedness program to reduce the Nation's vulnerability to energy supply disruptions. We in this administration have reason to be proud of our accomplishments to date in developing a sound Strategic Petroleum Reserve program.

As this committee knows, the administration believes strongly that reliance on the marketplace is the best means to distribute petroleum and has abandoned reliance upon allocation, price control, and mandatory demand restraint measures. The development of adequate private

crude oil stocks, in addition to Government-owned stocks, is an effective means of dealing with an oil supply disruption. In addition to continuing a buildup of SPR inventory, we are working toward removing any disincentives for private stockpiling.

As of this morning I am pleased to report that the Strategic Petroleum Reserve holds some 319 million barrels in its inventory. To go to your opening statement, Senator, where you talked about failure of a program, I am happy to report for this administration what we consider significant success.

Development of the new SPR storage capacity is proceeding in accordance with our baseline schedules and we are filling new capacity as it becomes available.

At this point I would like to turn to the specific questions and issues that were contained in the subcommittee's letter of invitation.

The President's fiscal year 1983 budget projected an end of fiscal year 1982 fill of 267 million barrels and proposed a fill rate of 209,000 barrels per day in fiscal year 1983 to achieve a projected end of fiscal year inventory of 343 million barrels. In 1982 we exceeded our fill projections by 10 million barrels. Our current plans call for an average daily rate of 220,000 barrels a day which will provide an inventory of 358 million barrels at the end of the fiscal year 1983. This increased permanent storage capacity is based upon accelerated leaching capability and certification of additional capacity in existing caverns.

This current projection of inventory represents the equivalent of 78 days of projected 1983 U.S. net oil imports.

Because of prior year carryover funds and the recent decline in world oil prices, if we fully utilize these carryover funds and the new 1983 budget authority, a fill rate of 288,000 barrels per day would be required averaged over fiscal 1983.

This increase means an additional $703 million in fiscal 1983 outlays for acquisition of an additional 25 million barrels of crude oil and would necessitate use of interim storage.

At an average estimate of $3.60 per barrel per year to store crude oil, some $89 million would be required for interim storage costs alone.

The administration has opposed the use of interim storage because of this increased cost and the management problems inherent in disbursed non-Government storage. In addition, the additional purchases required in a relatively short time frame to achieve the 288,800-barrel-per-day fill rate average over the year could affect the crude oil market and would be inconsistent in our judgment with the requirement of EPCA that oil be acquired with a minimum impact on market conditions.

We believe that we need to continue with an aggressive SPR fill policy but that it should be balanced against budget imperatives. This balance should be viewed in light of the changes in circumstances which have occurred since the SPR program commenced. We now have substantial SPR volume.

Our dependence upon foreign oil has significantly declined. Imports from Arab OPEC nations are not nearly the factor they once were and world oil prices are not and are not expected to be at levels once feared.

The benefits from SPR fill during fiscal 1983 at rates in excess of fill capacity would in our judgment be negligible and would be greatly

outweighed by the increased programmatic and Federal budget burdens entailed by such higher fill rates.

Accordingly, it is not anticipated that a fill rate in fiscal year 1983, which literally utilizes all available appropriations, will be recommended by this administration.

The President's fiscal year 1984 budget proposed a fill rate of 145,000 per day for fiscal year 1984 and projected a fill rate of 100,000 barrels per day in fiscal year 1985 for the purpose of outyear budget projections. However, final resolution of the fill rate for fiscal year 1983 necessarily will impact the fill rate for fiscal year 1984, and the fill rate for fiscal year 1985 is subject to further review during the fiscal year 1985 budget preparation process.

With respect to the question of the size of the SPR, the administration remains committed to the development of a full 750-million barrel strategic petroleum reserve program. When this administration took office, less than 15 percent of this goal had been reached. By the end of fiscal year 1984 present fill projections and site development will bring us over halfway toward this goal.

Phase III activity has begun at the three sites; specifically, Bryan Mound, West Hackberry, and Big Hill. However, there is no specific schedule for completion of the full 750-million barrel system. The timing for the development will be decided in our fiscal year 1985 budget process.

With respect to quality of oil, the Strategic Petroleum Reserve oil is purchased by type and then segregated into four grades or qualities depending primarily upon gravity and sulfur content.

Our systems are designed to maintain this segregation both in storage and during drawdown. Our plans are to maintain a 35:65 ratio between low-sulfur sweet and high-sulfur sour crude oil. This ratio includes the crude oil under contract from Mexico. Our current mix, with an inventory of 319 million barrels, is 34:66.

Senator WARNER. Mr. Vaughan, I am going to ask you if you would suspend at this time. Senator Matsunaga and I will have to go to the floor, Senator Hecht will be returning shortly, and then I am going to ask you to remain in the witness seat until all Senators have had the opportunity to ask questions.

Mr. VAUGHAN. Yes, sir.

Senator WARNER. Your direct testimony will be concluded as soon as the Senator from Nevada returns.

[A brief recess was taken.]

Senator HECHT [presiding]. We will now resume. Thank you.

Mr. VAUGHAN. I believe, Senator, I stopped at the point of making a comment on the subcommittee's question on quality of oil. SPR oil is purchased—no, I believe I had finished that.

To go to the question that the subcommittee had raised in its invitation on the SPR drawdown plan, the SPR drawdown—or distribution—plan, specifically amendment No. 4 to the Strategic Petroleum Reserve plan, and the accompanying Strategic Petroleum Reserve report, required by the Energy Emergency Preparedness Act of 1982, outlined a framework for decisionmaking on the use of the SPR in the event of an energy disruption. The plan described the principal factors which might be considered, the range of different scenarios that might

weigh in favor of or against use of the SPR at any given point and some of the management and information systems either available or under development in the program.

The administration is continuing to perform a wide range of analytical studies concerning the use of the SPR, the relationship of the SPR to private-sector inventory behavior and the relationship of the U.S. public and private inventory decision to the decisions of our allies around the world.

With respect to the question as to the status of the SPR drawdown exercise, the simulation test for the strategic petroleum drawdown procedures, which we have called "DIREX–B", will begin on July 11, 1983. The DIREX–B is an exercise aimed at assessing the Department's ability to effect an SPR drawdown in a fashion consistent with the procedures set forth in the SPR distribution manual. The manual addresses three key areas: Decisionmaking, sales management, and operations management.

The DIREX–B exercise will be a DOE-wide effort, focusing on an evaluation of the management and administrative process and will involve the substantial participation of all offices whose responsibilities are essential to an SPR drawdown.

With respect to the question on the international energy program, the Energy Policy and Conservation Act permits the President to draw down the SPR in the event of a severe energy supply interruption or, if necessary to meet U.S. obligations under the international energy program. There are several ways in which the SPR might assist in meeting U.S. obligations under the IEP.

First, an SPR drawdown would supplement domestic supplies and thus reduce U.S. imports, thereby also reducing any allocation obligation that might otherwise have been incurred under the international energy program.

Second, companies participating in the International Energy Agency oil sharing system would be eligible to bid competitively for such SPR sales and thus might divert foreign cargoes to other IEA countries.

Third, directed sales provided for under the SPR drawdown plan could be made available to U.S. oil companies to replace oil diverted to other countries under obligations of this country pursuant to the international energy program.

If such directed sales are made, the price for such SPR oil would be at the average price of Strategic Petroleum Reserve oil sold at the contemporaneous competitive sale or at the most recent competitive sale if no contemporaneous competitive sale is held.

This concludes my abbreviated statement, Mr. Chairman, and I am ready for your questions.

[The prepared statement of Mr. Vaughan follows:]

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STATEMENT OF

WILLIAM A. VAUGHAN

ASSISTANT SECRETARY
ENVIRONMENTAL PROTECTION, SAFETY, AND
EMERGENCY PREPAREDNESS

DEPARTMENT OF ENERGY

BEFORE THE
SENATE COMMITTEE ON ENERGY AND
NATURAL RESOURCES

MAY 6, 1982

Mr. Chairman and Members of the Committee:

Thank you for inviting me to discuss the Department's emergency preparedness programs. The Department's three energy emergency programs are concentrated in three program offices under my direction--the Office of Energy Emergencies, the Strategic Petroleum Reserve (SPR) and the Naval Petroleum and Oil Shale Reserves.

The overriding goals of the Department's energy emergency preparedness program are to reduce the Nation's vulnerability to energy supply disruptions and to mitigate their adverse impacts upon the Nation. We have abandoned the past policy of extensive Federal intervention in the marketplace--oil allocations, price controls and mandatory demand restraint measures. These regulations created or exacerbated the adverse economic and social impacts of fuel shortages.

Our strategies to reduce vulnerability are reliance on the marketplace as the appropriate response to fuel shortages, and an aggressive Strategic Petroleum Reserve fill policy. We seek to remove barriers to short-term marketplace adjustments and to develop adequate crude oil stocks that can be drawn down in an emergency.

In addition to our commitment to the SPR we want to encourage the buildup of private stocks by suppliers and large consumers before an emergency, and we are working to remove disincentives to private stockbuilding. The Naval Petroleum Reserves are also producing at the maximum efficient rate and will sell the Government's share of production to the Department of Defense to help it establish secure sources of supply. Let me discuss each of these programs in more detail with an emphasis on emergency programs as requested in the invitation letter.

The Strategic Petroleum Reserve presently contains 254 million barrels of crude oil with a maximum drawdown capability of 1.7 million barrels per day. The total fill for calendar year 1981 was 122.5 million barrels, resulting in a cumulative fill of 230.3 million barrels by the end of 1981. We exceeded an average daily fill rate of 300 thousand barrels per day for seven months last year with the highest average daily rate of 513 thousand barrels per day achieved in May. In the past fifteen months this Administration, with the assistance of the Congress, has increased the oil stored in the Reserve by over one hundred and thirty percent to where it is over one-third full.

There were four reasons for the SPR's oil acquisition success over the past year: (1) the policy impetus and sustained support of top Administration officials; (2) availability of oil storage capacity which had been left unfilled when this Administration took office; (3) favorable oil market conditions; and (4) Congressional approval of nearly $5 billion in appropriations requested by President Reagan since he took office.

For the remainder of FY 1982, we have an additional 18 million barrels under contract and scheduled for delivery. This will increase our cumulative SPR inventory to 272 million barrels at the end of FY 1982. We are now accepting offers for short-term delivery to fill new storage capacity as it becomes available and we also plan to solicit contracts later this year for deliveries of oil to fill Phase II storage capacity during fiscal year 1983.

We are developing the SPR program in three separate phases to provide 750 million barrels of capacity.

Phase I consists of 250 million barrels of storage capacity at five sites - Bryan Mound in Texas; and Bayou Choctaw, West Hackberry, Weeks Island and Sulphur Mines in Louisiana. It also includes a Government-owned terminal facility constructed at St. James, Louisiana. We finished construction on these sites in 1980, and we expect to complete actual oil fill of Phase I storage in FY 1982.

Under Phase II, we will gain an additional 290 million barrels of storage by expanding three existing Phase I sites. Bryan Mound is being expanded by 120 million barrels, West Hackberry by 160 million barrels and Bayou Choctaw by 10 million barrels. An existing storage cavern will be acquired for the additional capacity at Bayou Choctaw. New caverns will be created at Bryan Mound and West Hackberry through solution mining. Construction of all Phase II surface facilities was completed in 1981.

Phase III involves the further expansion of Bryan Mound and West Hackberry by an additional 70 million barrels and development of a new 140 million barrel site at Big Hill, Texas. The Big Hill site, as currently planned, will include 14 new caverns and the necessary surface facilities, and when filled will increase the SPR drawdown rate to almost 4.5 million barrels per day.

At this juncture it is appropriate to express our strong opposition to the requirement in Amendment 1354 to S. 2332 that the Department increase the SPR fill rate to an average annual daily rate of at least 300,000 barrels per day. We believe that our current policy of acquiring oil and filling the SPR to the level of available permanent storage capacity is sound, particularly in light of the constraints in the President's budget request and permanent capacity limitations.

It simply is not possible in the near-term to significantly increase permanent storage capacity for the SPR over the projected levels, and our ability to obtain additional storage pending completion of permanent underground storage facilities is dependent on the availability of suitably-located, appropriately-sized and secure storage facilities. It must be noted that in choosing to utilize non-permanent storage facilities we increase certain program risks such as the potential for fraud and theft, possible displacement of private stocks, increased environmental consequences and higher facility costs.

In view of current oil market conditions and the prospect of continued price decline or, at a minimum, stable oil prices, we are considering the advisability of purchasing some additional oil with the funds contained in the FY 83 budget request and holding such oil in temporary storage pending the completion of permanent storage facilities.

We also are strongly opposed to the requirement in Amendment 1354 to S. 2332 for submission of a new SPR Distribution Plan. The current SPR Distribution Plan, which became effective November 15, 1979, following Congressional review, provides the President with ample flexibility in using the SPR to respond to a severe energy supply emergency.

Different energy supply disruptions may necessitate different responses. Since the length and depth of a disruption will not be known at the outset, nor will a disruption be constant and uniform over time, rigid plans for drawdown and distribution make little sense and, if developed and made public, could impair the effective use of the SPR. The existing SPR Distriution Plan is designed to preserve the required flexibility by detailing options, including price-competitive sale of SPR oil, allocation of SPR oil at administratively-set market prices, targeting of SPR oil at hard hit regions or sectors of the economy, using SPR oil to meet defense needs, etc. The Plan also gives the President the authority to distribute SPR oil to U.S. firms which make voluntary offers to enable the United States to meet its commitments under the Agreement on an International Energy Program.

We also oppose the study requirements in the amendments to S. 2332, since certain of the materials have been completed and provided to the Congress and other items are currently under study. On several occasions, we have discussed this matter with the Senate Energy Committee staff.

Within the framework of the existing SPR Distribution Plan we are developing an SPR Distribution Management Manual which identifies logistical, legal, and managerial requirements to distribute SPR crude oil. This manual focuses on the actions the Department must initiate once the President has made the necessary findings and orders an SPR drawdown.

Other office activities to enhance domestic supplies include the analysis of options to encourage the buildup of fuel stocks by the Federal and private sectors. We are evaluating scenarios to eliminate disincentives and studying possible incentives which might be appropriate.

The Naval Petroleum and Oil Shale Reserves also are a critical component of the Department's energy emergency preparedness program. Last fall the President made a major decision to continue production of the Naval Petroleum Reserves at their maximum efficient rates for three years beyond the initial six-year period ending April 4, 1982. Although the decision by the President with respect to the national interest was based primarily on economic considerations, the Department of Defense will benefit by receiving all of the Government's share of crude oil production from the Reserves beginning May 1, 1982. DOD will exchange the crude for military fuels delivered at various locations in the United States. The exchange is open to all companies regardless of size, thereby assuring competition. This assured supply of oil will help insulate the Department of Defense from the adverse impacts of future crude oil shortages.

Oil produced at Naval Petroleum Reserve No. 1 also was used indirectly to help resume fill of the Strategic Petroleum Reserve. The program through which NPR-1 oil was exchanged for oil delivered to SPR storage sites was concluded November 1, 1981. Over the year

preceding that date, an average of 103,472 BOPD were sold to six companies, which in exchange, provided an equivalent amount, totaling 36.7 million barrels, for storage in the SPR.

Energy emergency program efforts are also directed to mitigating the impacts of fuel supply disruptions. We support U.S. involvement in the International Energy Agency (IEA). We are developing plans for U.S. participation in the IEA's Allocation System Test-4 in the spring of 1983. To complement these efforts, we are also examining the financial and economic impacts of energy supply disruptions, and the feasibility of recycling selected revenues.

In order to meet statutory requirements and to fulfill our public responsibilities in emergencies, it is essential for the Department to analyze and disseminate certain information. For this reason we are developing a public information plan which will lead to greater public understanding of the need for energy emergency preparedness before a crisis occurs, and which will provide effective communications during a crisis. We are also developing and refining a daily energy situation report--an "early warning" tripwire system to provide accurate and timely assessments of domestic and international energy markets and conditions. In addition, we are developing a rapid information retrieval and analytical capability utilizing EIA data and expertise.

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Government cannot and should not attempt to accomplish the emergency preparedness task alone. To obtain needed industry expertise in planning for and responding to energy emergencies, we are considering revitalizing of the long dormant Executive Manpower Reserves--the Emergency Electric Power Reserve, the Emergency Petroleum and Gas Reserve and the Emergency Solid Fuels Reserve. The Reserves could provide a role for both energy producers and consumers as well as for State and local governments, financial institutions, and other businesses, on a volunteer basis, without establishing a permanent bureaucracy.

In addition to the Manpower Reserves programs, we have a responsibility to coordinate our activities with other State and local governments as well as with other Federal agencies. To facilitate communication, we maintain the DIALCOM electronic mail system with most States and with the North American Electric Reliability Council.

Several plans to support defense preparedness are under development including National Oil Board plans to support the U.S. commitment to the NATO Wartime Oil Organization. We are also developing plans to implement the Defense Production Act to ensure energy supplies for defense needs.

We are planning for and testing various programs, including: IEA sharing system, NATO oil supply scheme, civil preparedness programs, and Continuity of Government. Last fall we participated in DOD's FUEL-EX and we have just finished testing our Continuity of Government Plan in FEMA's REX-82 Alpha civil-military preparedness exercise and are preparing to test the Strategic Petroleum Reserve drawdown management process.

Mr. Chairman, as the Committee knows and as has been reported in the media, Secretary Edwards announced in a formal statement and a press release that the Department of Energy was cooperating fully with the Department of Justice in an ongoing criminal investigation of allegations that there had been substitution of waste oil for crude oil purchased for storage at the Bayou Choctaw SPR facility in the late 1970's. My staff and I have previously discussed this with several Members of Congress and the committee staff. I would like to review briefly these allegations currently under investigation by several Federal agencies which may ultimately lead to criminal charges. Anyone found responsible will be prosecuted vigorously.

I would emphasize that even if the investigation proves these allegations to be true, the allegations affect only a very small part of the total program. Only one relatively small cavern is involved, and only deliveries which were made by barging in 1977-1978. The total oil barged to this site was 9 million barrels, therefore, in the worst possible case, less than 4 percent of the crude oil now

stored in the Reserve may be affected. Barging of oil to the SPR storage sites was used during 1977-1978 and was terminated when a pipeline transportation system from marine terminals to the SPR sites was completed. No oil has been barged to a SPR storage site since December 1978.

There have been tests of the oil in storage at the single cavern in question. These tests were conducted under the supervision of the investigative agencies. The results will be furnished to these agencies and then eventually to the SPR organization.

We have recently verified by standard oil specification tests the quality of crude oil in the other SPR caverns which have been filled with crude oil. In each case the tests demonstrate that the oil fully meets our specifications. Moreover, I am authorized by the Department's Inspector General to state that no evidence has been found that suggests that any other facility has received substandard oil, and that there is no credible evidence that oil may have been stolen, substituted or otherwise compromised at any other facility.

We have reexamined our security procedures and our current methods for receiving and checking the quality of each load of crude oil purchased and delivered to the Reserve. We are absolutely confident that these procedures and test methods assure that the oil placed in the Reserve both meets our specifications and will be available to meet every requirement that may be placed on the Reserve in the future.

Secretary Edwards and I have every confidence in the integrity of the overall SPR program and the quality of the crude oil in the Reserve.

This concludes my remarks and I would be pleased to respond to the Committee's questions.

Senator HECHT. Again, at the advice of my counsel, there are a few questions that some of the Senators want to ask. So if I can beg your indulgence we will recess until the Senators return. Thank you very much.

[A brief recess was taken.]

Senator WARNER [presiding]. Mr. Secretary, could you provide us some of the details of the Cabinet Council's meeting which occurred yesterday afternoon on the subject that we are dealing with today?

Mr. VAUGHAN. Mr. Chairman, the Cabinet Council meeting that occurred, what little I know about it, occurred late in the afternoon. The Secretary went immediately from that meeting to the plane to go to Paris. I do not know what occurred at that Cabinet Council meeting, other than no final decision was made about the administration's position on the Strategic Petroleum Reserve. I have not had an opportunity to talk to the Secretary since that meeting.

Senator WARNER. Well, now, there are individuals whom I recognize who were long present in this room who are closely associated with the Secretary.

Have you had an opportunity to avail yourself of conversations with them?

Mr. VAUGHAN. Not on the details of what went on in that Cabinet Council, no, sir.

Senator WARNER. Well, I must express some disappointment on that because I was aware of the Council meeting and I was hoping that this hearing would benefit from at least the issues that were discussed. But I will have to accept your answer.

In the recent past there have been accounts of transactions with respect to the storage of SPR that raised some questions, some of those questions being of a legal nature.

Where is your investigation of those issues to date?

Mr. VAUGHAN. Could you be a little more specific, Senator? Are you talking about the waste oil investigation?

Senator WARNER. This is correct.

Mr. VAUGHAN. My understanding of the results of the waste oil investigation to date, Senator, which is being run by the U.S. attorney in Louisiana and with considerable involvement of our own IG and the U.S. Customs Service, is that the ability of the reserve to be fully utilizable—in other words, the oil that is in the reserve was tested and is shown to be validated. In other words, what we think is there is, in fact, there and——

Senator WARNER. How about the quality?

Mr. VAUGHAN [continuing]. And the quality is exactly as we predicted and expected from our calculations and is confirmed by those studies. So the conclusion that I drew from that is that no waste oil was introduced.

Senator WARNER. In which case, based on what you know, there is going to be nothing of an adverse report out of that.

Mr. VAUGHAN. Absolutely, Senator. I believe—and the letter that the RIG sent to this committee—it may have been to Mr. Sharp's committee in the House, quite frankly. I will verify that.

[The letter was sent to the chairman of the House Committee on Appropriations:]

DEPARTMENT OF ENERGY,
Washington, D.C., January 12, 1983.

Hon. JAMIE L. WHITTEN,
Chairman, Committee on Appropriations,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in response to a request of the Department of Energy by the Appropriations Committee in House Report No. 97–942, Department of the Interior and Related Agencies Appropriation Bill, 1983. That request was for a report of the Department's investigation into allegations that "some of the oil now in the [Strategic Petroleum] Reserve is spoiled or was of a lower quality than was ordered."

The investigation to which the Committee request refers is being conducted by my office and other Federal investigative agencies under the direction and guidance of the United States Attorney for the Middle District of Louisiana. The allegations involved in the investigation were that in 1977–78 quantities of crude oil bound for the Strategic Petroleum Reserve storage site at Bayou Choctaw, Louisiana, had been stolen enroute. It was further alleged that waste oil or other industrial byproducts, possibly containing unusual toxic or hazardous chemicals, was substituted so that the loss would not be readily detected.

Part of the ongoing investigation into these allegations consisted of scientific analyses of samples removed from different levels of the storage cavern in question. These tests were conducted by the U.S. Department of Energy laboratory at Bartlesville, Oklahoma, and the U.S. Customs laboratory in New Orleans, Louisiana, using separate sets of samples extracted from different levels in the cavern. Neither laboratory knew that other samples were being separately evaluated. Some of the analysis of such samples consisted of tests—such as API, sulphur content, BS&W, and viscosity—traditionally used by the oil industry to determine the quality of crude oil. However, because of the suggestion that hazardous or toxic chemicals had been placed in the cavern, additional, more technologically exotic and sophisticated analyses were performed on the samples from the cavern. So far, the results of the tests and analyses are that:

1. No hazardous or toxic chemical substances have been identified at any level in the cavern; and
2. The cavern contains good quality, refinable crude oil having properties consistent with the crude oil purchased and transported to the cavern.

In addition, we have reviewed the German experience with the storage of crude oil in salt caverns to compare their analysis of the effects of such long-term storage on oil with the results of the analyses of the samples from the cavern in question at Bayou Choctaw. This comparison indicates that there is nothing unusual about the oil in the cavern at Bayou Choctaw.

In sum, the results of the analyses of samples taken from the suspect cavern show that, should it become necessary, the oil in that cavern could be used for its designated purpose.

Sincerely,

JAMES R. RICHARDS,
Inspector General.

Mr. VAUGHAN. At any rate, I think it rather conclusively states that the ability of the reserve to perform its mission is not jeopardized and they have found no evidence to indicate that it is.

Senator WARNER. In April this year, specifically April 26, there was a letter to Congressman Dannemeyer in which Secretary Hodel estimated the cost of interim storage was about $3.60 per barrel.

The subcommittee has received testimony from a number of witnesses that the existing storage facilities could be made available to DOE almost immediately for use on an interim storage basis.

All of these parties have testified that they can make storage available for far less than $3.60 reported by the Secretary. Some estimates range in the area of $1 to $2 per barrel. Could you tell us how that $3.60 figure was calculated?

Mr. VAUGHAN. $3.60, as we indicated, Senator, is an average. There obviously are lower and higher figures. It is our best estimate—and we furnished that $3.60 to the Secretary. It is our best estimate of what we think the marketplace will produce if asked, with what we know of the quantities available.

Senator WARNER. Have you availed yourself and members of your staff to those individuals who are offering at a lower price, to hear their case?

Mr. VAUGHAN. First, we have had no specific offers, Senator. We have had a number of discussions with people and groups interested in interim storage and I do believe we have a good measure of what is available in the interim storage marketplace.

Our own estimates ranged, if I recall, from some $2 to $5—I'm sorry, $1 to $5. We estimated that the average would be $3.60 and that average was a weighted average based on what we knew was available in quantity in the marketplace.

Senator WARNER. The committee would desire you to provide for the record a recitation of those meetings, figures that were discussed, your opinion with respect to the ability of those offerors to deliver at those costs and reasons why at this point in time, I presume that you are not ready to accept them.

Mr. VAUGHAN. Senator, to be fair, again, I believe that we have received no formal offer and we have been fair with people that we have talked to to discourage a formal offer so that when and if we had to go out with a solicitation they would not be unfairly disadvantaged.

Senator WARNER. Maybe we are dwelling too much on the word "formality." But we want to have it for the record.

Mr. VAUGHAN. We will provide, Senator, and will be more than happy to, a breakdown of how we arrived at our figures, what sources we used, and why and how we arrived at the figure $3.60 which in our judgment is a weighted average.

[The requested information follows:]

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INTERIM STORAGE COST ESTIMATE

The Department of Energy has been using an average cost of $3.60/bbl/year for interim storage for estimating and planning purposes. In using this cost estimate in discussing interim storage, we have been careful to note that it is an average cost and that we would expect actual cost for various types of storage to range from $1.00 to $5.00/bbl/year.

In arriving at the average cost of $3.60/bbl/year, the Department of Energy used various sources of information including private industry, Congressional testimony, the Congressional Budget Office, GAO, analyses prepared within the Department of Energy, and offers received for similar services under a solicitation for Basic Ordering Agreements for surge storage. These estimates ranged from $1.00/bbl/year for existing steel tanks to approximately $8.00/bbl/year for floating storage on U.S.-flag vessels.

Attached is a table showing a representative sample of the estimates from different sources for leased temporary storage. It must be noted that most of these estimates are for storage only and do not include associated cost that would be involved with interim storage, such as terminalling charges for discharging and loading tankers, transportation from interim storage to SPR permanent storage, tank cleaning, and quality assurance sampling and testing. We believe actual costs would be further influenced by market conditions at the time of procurement, storage facilities locations, the quantities of various types of storage offered, and specific contract requirements related to security, liability, etc.

Also attached is a list of individuals and the firms they represent which we have met with to discuss interim storage. We have not received formal proposals from these firms and the discussion of costs has by necessity been general in nature pending the development of specific requirements and contract provisions. These discussions have, however, tended to confirm our belief that the lower cost estimates provided by some sources are for storage only and do not include the associated costs discussed above.

In summary, the $3.60/bbl/year cost is not a precise estimate based on formal offers but a reasonable approximation of expected cost based on an average cost of various types of storage anticipated to be available plus other costs associated with interim storage. The only formal offers we have received for similar services, received earlier under the DOE Basic Ordering Agreement Solicitation, tend to support this estimate since the majority of the offers fall within the range of $.20 - .40/bbl/month when terminalling charges are included.

2 Attachments

Temporary Leased Storage

Source	Aboveground Steel Tanks	Floating Storage (Primarily Foreign Flag)	Existing Salt Caverns
GAO Report	$1.80 bbl/yr[1]	$3.00 bbl/yr[3]	
EMD 82-62	$2.00 bbl/yr[2]	$3.65 bbl/yr[4]	
Industry			$1.20-1.80 bbl/yr
IFTO	$1.80 bbl/yr[5]		
PIRA		$2.64-3.16 bbl/yr[6] $1.20-1.80 bbl/yr[7]	
Industry Responses to DOE Basic Ordering Agreement Solicitation[8]	$0.12 bbl/month - $0.45 bbl/month	$0.15 bbl/month - $0.23 bbl/month	
Maritime Research, Inc.		$0.78-1.65 bbl/yr[9]	
SAI[10]	$1.05-3.40 bbl/yr	$8 bbl/yr	

[1]DOE estimate, December 1981.

[2]Independent Fuel Terminal Operators, March 1982.

[3]Petroleum Industry Research Foundation and the Transportation Institute, March 1982.

[4]GAO calculation, March 1982.

[5]Independent Fuel Terminal Operators, August 1982.

[6]Petroleum Industry Research Associates, Inc., July 1981 cited by Congressional Research Service.

[7]Petroleum Industry Research Associates, Inc., March 1982.

[8]DOE solicitation for surge storage capacity for short term lease (under six months) - costs cited are for storage and terminalling charges.

[9]Maritime Research Inc., August 1981.

[10]Science Applications, Inc., Report on Options for Accelerating Storage Oil Stockpiling, October 1981.

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February 19	.....	Jim McGregor, Coastal Corporation (Floating Storage)
February 24	.....	H. Spencer Mathews, M. and W. Associates, Inc (Floating Storage)
February 25	.....	Independent Fuel Terminal Operators
March 18	.....	Jim Price, Hub International (Floating Storage)
March 18	.....	Independent Fuel Terminal Operators
March 24	.....	Jim McGregor, Coastal Corporation (Floating Storage)
April 23	.....	Glenn Schleede, New England Energy Co.
May 7	.....	Intertanko (Floating Storage)
May 13	.....	Mitch Stanfield, Coastal Corporation (Floating Storage)
August 3	.....	Jim Price, Hub International
August 4	.....	Jim McGregor, Coastal Corporation
August 10	.....	Independent Fuel Terminal Operators
August 30	.....	Dean Taylor, Seaway
September 3	.....	Mr. Schwedfeger, Bayonne Terminal
September 7	.....	Richard Bank, Intertanko
September 9	.....	Conrad Everhard, American Global Lines
September 27	.....	Jim Price, Hub International
September 28	.....	Eliott Halpern, Intertanko (Floating Storage)
October 18	.....	Dow Chemical (Stratton Ridge)
November 30	.....	Jim Price, Hub International
August 27	.....	Jack Evans (Floating Storage)

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January 25	.....	Eliott Halpern, Intertanko
January 26	.....	Conrad Everhard, American Global Lines
January 28	.....	Jim McGregor, Coastal Corporation (Floating Storage)
February 10	.....	Dean Taylor, Seaway Pipeline
February 11	.....	Norwegian Ministry of Defense (Floating Storage)
March 2	.....	C. Everhard, C.C. Tung (Floating Storage)
May 2	.....	Ashland Oil representatives (LOOP)

Senator WARNER. Senator Matsunaga.

Senator MATSUNAGA. Thank you, Mr. Chairman. Since there is new leadership now in the Department of Energy, although I have asked these questions at previous hearings, I would like to ask them of you, Mr. Secretary, and see what changes if any have occurred because of the new leadership.

Hawaii, as you know, is 2,500 miles from the West Coast and, as a matter of fact, Honolulu is farther away by tanker from the nearest SPR storage than Washington, D.C. is from Istanbul, Turkey. It would be impossible to move actual wet barrel of SPR oil to Honolulu before Hawaii has suffered considerably. I remember during World War II after Pearl Harbor was struck, when I was in active service as an acting commander on the island of Molokai, the submarines that were lurking in the waters at the time sunk all available shipping between the islands.

A company of men had not even food supplies for a period of 60 days. Fortunately, the shores of Molokai provided abundant fish and we had deer on the island. So we sent our men hunting and fishing and we did at least survive over a 60-day period.

Hawaii is more dependent upon petroleum than other States and of which most of our supply is foreign oil. In time of emergency, although Hawaii has gone into the development of alternative energy, our State would suffer the most.

I am wondering now whether DOE, Mr. Secretary, has any plans specifically outlined for Hawaii.

Mr. VAUGHAN. The Department does not have a specific plan designed for the State of Hawaii.

Senator MATSUNAGA. Then don't you think it is high time, since Hawaii is the 50th State in the Union and we have got 975,000 people out there, that maybe some effort ought to be made to protect Americans out there, maybe by implementation of the Regional Petroleum Reserve which Congress has already authorized?

Mr. VAUGHAN. Senator, the Department was required, under the act of last fall, the Energy Emergency Preparedness Act of 1982, to revisit the subject of regional reserve and it did so.

It was also required and specifically encouraged by this committee to make out a full administration determination and to submit reports back to the Congress on a number of subjects including regional reserves.

The report was filed Dec. 31, 1982. It did reflect the judgment of the administration on the subject of regional reserves. In summary, the administration reached the conclusion that regional reserves are not justified or sufficiently justified in a national program to warrant the Department effort in that direction at this point in time.

In that report the State of Hawaii was specfically considered beginning at page 30. I believe the report answers the questions. I can understand perhaps why you may not be happy with those findings.

But I would point out also that this subject has been studied by every administration since the beginning of the SPR program. All reached the same conclusion that regional reserves are not incrementally justified. We would encourage—in fact I think the Hawaiian situation is an

excellent example of where the State should make its own emergency preparations.

Senator MATSUNAGA. As I understand it, the decision is primarily based on the cost factors. Is that correct?

Mr. VAUGHAN. Both cost factors and need, Senator.

Senator MATSUNAGA. And need?

Mr. VAUGHAN. Yes, sir.

Senator MATSUNAGA. How much of the cost factor as opposed to the need factor entered into the determination made regarding Hawaii?

Mr. VAUGHAN. I certainly feel that it was a balanced judgment, Senator, but I am not prepared to give you a mathematical breakdown. I don't think one is really possible on that kind of trade off.

Senator MATSUNAGA. Have you had any comparison of costs made between storage on the mainland as compared to storage of a similar type—I don't mean the salt domes—in Hawaii?

Mr. VAUGHAN. We certainly considered cost, Senator, if I understand the thrust of your question. I may not have understood you. I would point out that when we did this study on Hawaii in particular, we did consult the Defense Department people and we did consult the refiners in the State of Hawaii. There is disagreement among refiners in the State of Hawaii as to needs and abilities to adapt to certain crude such as Alaskan North Slope.

Senator MATSUNAGA. You talk about balance between need and cost. I don't think there is any question that there is a need, an extraordinary need, as was demonstrated in past emergencies, not only during wartime but during the oil embargo of 1973–74.

So, the one factor which is determinate, as I can see it, is cost. Unless you have made a study, a comparison of costs as to storage on the mainland, from which Hawaii is expected to draw in an emergency, and storage in Hawaii itself, even on an interim basis, I don't see how you can arrive at a fair and wise decision.

Mr. VAUGHAN. We are commanded, Senator, to run, as I understand it, a national program that will do the maximum amount of good for the least amount of money for this Nation's needs.

Senator MATSUNAGA. How can you do that if you don't have figures? I ask you now: Could you provide me with facts and figures—the considerations which entered into your decision not to put any storage facilities in Hawaii?

Mr. VAUGHAN. I will provide you, Senator, with all the material we have on the subject of regional reserves in general, about the—decision and all the material that we have that we used in arriving at the decision as respects Hawaii. I would be more than happy to.

Senator MATSUNAGA. When you say "generally" does it mean you found that the cost is prohibitive, that balancing costs with need you find no need for storage in Hawaii or are you going to give me comparative figures? I want the comparative figures because, you know, it is so easy to say: "Hell, Hawaii went for President Carter and, hell, we don't have to take care of them," and then just summary dismiss our needs out there.

The need is more important than the cost. This is what I am trying to say. Also, if you look at the cost, I think you will find that it will

be cheaper to store in Hawaii than to transport oil from the mainland.

Mr. VAUGHAN. We will give you, Senator, the figures that we have with respect to regional reserves in general and with respect to the State of Hawaii so that you know the basis upon which we made the judgment.

Senator MATSUNAGA. I would appreciate that very much because we have been studying that report. I was confused as to how you arrived at your decision.

Thank you very much.

[The requested information follows:]

REGIONAL PETROLEUM RESERVES*

In response to the request for facts and figures entering into the decision not to locate an in-region Strategic Petroleum Reserve (SPR) facility in the State of Hawaii, it is necessary to address a number of factors relating to the need for regional and noncontiguous storage as a function of existing emergency response capabilities, as well as specific issues and concerns raised by noncontiguous areas. The primary basis for the Administration's position regarding the impracticability of Regional Petroleum Reserves (RPRs) is the finding that the SPR, located in the Gulf Coast salt domes as crude oil, represents the most practical, efficient, and effective means of providing protection to all regions and noncontiguous areas. Our findings, as discussed in detail in the RPR report submitted to Congress on December 31, 1982, are based on a wide range of factors, such as existing SPR distribution capabilities, the current petroleum market status, the Administration's emergency response strategy, comparative costs, and security issues. Included in our assessment of the costs and benefits of decentralized storage for noncontiguous areas such as Hawaii was a balancing of the level of potential risks and the degree to which the marketplace could reasonably be expected to compensate for lost supplies in the same general manner as it would for sections of the contiguous 48 States. Provided below are summaries of issues which played a key role in our findings and a discussion of their impact on the question of an in-region RPR in Hawaii. This summary represents only an overview of those issues having the greatest impact on noncontiguous storage issues. The RPR report represents the Department's most current detailed assessment of the many factors considered. The report and sources referenced in the report bibliography should be referred to for additional detail.

1. SPR System Capabilities

The RPR report provided detailed information regarding the existing SPR physical distribution capability and accessibility to the major commercial distribution system. The concerns of noncontiguous areas regarding system capabilities, however, have tended to stress the distance from the U.S. Gulf Coast storage sites both in terms of delays in response timing and transportation cost issues.

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* The term is used here to include storage in noncontiguous areas of the U.S., even though the statutory provisions concerning noncontiguous storage are not identical to those governing Regional Petroleum Reserves.

Although it would cost more to transport SPR crude oil to areas outside the Gulf Coast, distribution of SPR crude oil must be considered in the context of overall domestic crude oil supply and distribution, including the exchange process and supply diversions. Thus, as prices rise within an area or region where supplies have been disrupted, additional supplies will flow to that area by a number of means, including exchanges and diversions which are an integral part of the business-as-usual market operations and logistics associated with the commercial distribution system. This natural adjustment of the marketplace will have the effect of causing diversion of uninterrupted Gulf Coast and other region imports to other markets, such as Hawaii. More importantly, transportation costs would not increase unilaterally for Hawaii unless Hawaii specifically rules out in advance any intention of using convenient alternative sources of crude oil. (These alternative sources are discussed in more detail below.) The analysis concluded, therefore, that such factors did not sufficiently justify the additional cost associated with decentralized storage, and that such concerns have tended to disregard the interrelatedness of the petroleum market, the benefits which all U.S. oil consumers will derive from an SPR drawdown whether or not they are direct recipients of SPR oil, and alternative means of emergency response flexibility available to areas concerned about the impacts of oil supply disruptions. Drawdown of the Reserve under free market policies can be expected to dampen price increases for all consumers, reduce the U.S. oil import bill, and prevent economic dislocations which would otherwise occur.

The Department of Energy has also developed detailed procedures to allow the expeditious authorization and implementation of SPR crude oil sales when necessary, thereby alleviating concerns regarding delays in response timing. Analyses are constantly being performed to provide decision-makers with a better understanding of SPR capabilities to serve different response objectives. Such analyses address such issues as drawdown rate possibilities, world wide petroleum inventories, and the economic impacts of oil supply disruptions.

2. Improvements in the Hawaiian Petroleum Market

The RPR report cited several improvements to the system of petroleum logistics serving Hawaii. These include:

- o expansion of indigenous refinery capacity
- o addition of refinery equipment to raise the proportion of jet fuel produced from a barrel of crude oil

- o substitution of domestic crude oil for a significant portion of previously imported refining raw materials.

More importantly, Hawaii is in a position to benefit from new supplies of oil which have been developed throughout Asia and the West Coast of North and South America. This capability will be further enhanced by promising new fields to be brought into production during the next 10 years.

As mentioned in the testimony and recent correspondence to the Hawaii Department of Planning and Economic Development concerning the RPR issue, the Administration encourages those concerned about the impacts of supply disruptions to develop sufficient flexibility to allow a wide range of emergency response options. In terms of Hawaii, the decisions regarding refinery flexibility and/or diversification of supply sources have the potential of providing for greater protection against the impacts of any supply disruption than the necessarily limited and short-term benefits that could be derived from an in-region RPR. More specifically, we believe that if there is a risk of an Indonesian oil supply disruption such flexibility is necessary because, regardless of the existence of an in-Hawaii RPR, there would be no assurance that the same crude oil sources could be re-established. Failure to prepare for such a contingency, if it is considered a credible prospect, would force Hawaii's refineries to invest in enhancements to current flexibility during a crisis rather than during business-as-usual conditions.

3. Removal of Domestic Price and Allocation Controls

The Administration's free market response strategy, i.e., reliance on free market competition to price and allocate petroleum supplies, has had a significant impact on both the findings of previous RPR analyses premised on the continuation of controls and the ability of the petroleum industry to make long-term decisions commensurate with the demands of their customers.

For example, under the system of price and allocation controls crude oil was apportioned to refiners according to the level of available supply and a national allocation fraction. The system made it difficult to provide additional crude oil to refiners with spare capacity. In the case of Hawaii, the controls severely complicated attempts to provide additional crude oil to West Coast refiners with available capacity to produce jet fuel to replace losses to Hawaiian imports of jet fuel. Under the free market approach refineries with spare capacity can be expected to bid for available crude oil based on the potential revenues from product markets they are capable of serving. The issue of access to available refinery capacity will be resolved as a business decision.

While not specifically a noncontiguous storage issue, the system of price controls maintained consumer demand at artificially high levels and tended to inflate estimates of the need for decentralized storage. Free market response strategies, however, will allow petroleum prices to reflect their true resource value in the marketplace. Consumers will make their own individual decisions regarding petroleum purchases and will, as prices rise, conserve or switch to products more readily available or economically efficient.

4. Comparative Costs of Decentralized Storage

As outlined in the RPR report, the storage facilities development requirements for decentralized storage would vary widely according to assumptions made regarding the timing, location, size, soil conditions, etc. The impact of such assumptions on ultimate cost per barrel figures makes direct cost comparisons meaningless. However, several cost estimates for aboveground steel tank storage have been developed as a part of continuing analysis of the costs and benefits of decentralized storage and have provided the basis for the Department's conclusions that the capital costs for developing new aboveground steel tanks would be much higher, on a per barrel basis, than the capital cost (including operations and maintenance through fill) of developing new solution-mined underground storage.

The following are some examples of estimates of the costs of both aboveground and underground storage as discussed in the RPR report.

Aboveground Storage

(1) Strategic Petroleum Reserve Acceleration Report to the Secretary, July 1981

This report analyzed alternative SPR facilities configurations in the 750 MMB to 1000 MMB range. It included estimates for the costs of aboveground steel tank storage facilities increments of 30 MMB and 40 MMB as follows:

	Real Cost (1981 Dollars)	
Increment	Total ($ Millions)	Per Barrel
40 MMB	$359	$8.98
30 MMB	297	9.90

In nominal dollars including projected inflation, the 40 MMB incremental was projected to cost $12.95 per barrel and the 30 MMB increment was projected to cost $14.43 per barrel. These nominal dollar estimates were predicated on receipt of the required appropriations in the FY 1982-83 period. Note that these are large storage sites (30-40 MMB) with the attendent economies of scale. An RPR site in Hawaii would likely be much smaller in size.

(2) Steel Tank Fabricators Association (1982)

On March 2, 1982, testimony by a representative of the Steel Tank Fabricators Association before the Subcommittee on Fossil and Synthetic Fuels of the House of Representatives Committee on Energy and Commerce included an estimate that a 50 MMB steel tank storage facility would cost $360 million or $7.20 per barrel in real January 1982 dollars. This estimate excluded construction management, operations and maintenance through fill, and other cost elements included by the Department in its estimates. Therefore, this estimate is understated, and cannot be directly compared to the SPR program estimates.

(3) PLT Engineering, Inc., Cost Estimates for Aboveground Crude Oil Storage, April 1982

PLT Engineering, Inc., under contract to the Department, prepared cost estimates for steel tank storage sites of 30 MMB, 40 MMB and 50 MMB. Since aboveground storage development costs vary with soil conditions, three alternative sets of soil conditions were assumed. The following table presents the real cost per barrel (in January 1982 dollars) estimates developed by PLT Engineering, Inc.

(Cost/BBL in January 1982 Dollars)

	Storage Site Size (MMB)		
Soil Conditions	30 MMB	40 MMB	50 MMB
Hard Soil No Preload	$8.65	$8.52	$8.38
Tank Foundations with Berms	8.78	8.66	8.53
Preload Using Wick Drains	8.91	8.79	8.66

These estimates exclude the costs of constructing a crude oil pipeline from the storage site to a marine terminal or pipeline to serve for fill and drawdown of the site. The Steel Tank Fabricators Association estimate similarly excluded this element of cost by assuming that a pre-existing pipeline already served the storage site. Thus, these estimates also understate the actual costs which would likely be incurred.

Use of existing aboveground storage rather than developing new storage capacity might be possible. On March 2, 1982, the Independent Fuel Terminal Operators Association (IFTOA), in testimony before the Subcommittee on Fossil and Synthetic Fuels of the House of Representatives Committee on Energy and Commerce, indicated that IFTOA members might be able to make available 12 million barrels in storage capacity to the Government for SPR use. The 16 IFTOA terminal operators, located along the East Coast, have a combined storage capacity of 57 million barrels. However, any costs for storage would be for continuing rentals, rather than the one-time development costs for the current SPR program.

(4) New England Governors' Conference, Inc.

More recently, the New England Governors' Conference transmitted to the Department a listing of terminals (capacity of approximately 7 MMB) which might be made available for SPR storage. Some of the cost estimates related to the recommissioning of mothballed storage facilities; other estimates related to the conversion of cone-roof tanks to floating roof tanks for purposes of crude oil storage; still others involved only annual costs for an unspecified storage period. The following table categorizes these estimates:

Terminal	Size (Thousands of Barrels)	Capital Cost ($000)	Annual Cost (per barrel)
Gulf	1,000	$ 700	$ .25
Sprague	1,000	N/A	N/A
Melville	1,380	1,884	.185
Long Island, ME	500	200	1.00
Vinci	500-1,000	N/A	2.50
New England Electric	1,000	N/A	N/A
Portland-Montreal P/L	812	1,800	N/A
Buckley Brothers	500	250	2.00

These estimates were not obtained as firm written responses to a Government solicitation for storage services and thus do not necessarily reflect how these firms would respond to the types of terms and conditions regarding insurance, security and the like which the Government might choose to employ. The age, condition and proximity to distribution systems for these terminals were not indicated. These estimates are presented to demonstrate, among other things, the wide variability in estimates for the costs of acquiring existing aboveground tankage for use in implementing a decentralized storage effort.

While we have not investigated the validity of these cost estimates in detail, even taking them at face value, there are a number of reasons why aboveground storage in existing facilities such as these would not be advisable, both for financial and programmatic reasons. The rental costs cited are yearly costs, while the SPR development costs for salt caverns are one-time only costs. In addition, there would be significant additional costs required for security and management of additional scattered SPR sites. In addition, most existing aboveground sites are for relatively small volumes--much less than the millions of barrels of storage in the existing centralized SPR facilities. This, in and of itself, would eliminate the savings achieved through economies-of-scale in current SPR operations.

(5) U.S. Army Corps of Engineers (COE), Huntsville, Alabama Division

In early 1980, the U.S. Army Corps of Engineers was tasked to assist SPR project managers in identifying potential regional and noncontiguous storage sites, and to project potential development costs and schedules. The estimated costs for Hawaiian sites, reported in 1980 dollars, equaled $19.81 per barrel. The assumptions for this cost estimate included Government-owned real estate, existing docks, new 14 inch pipeline to dock, poor soil conditions, and storage of 700,000 barrels of jet fuel in two tanks.

Underground Storage

The estimate at completion (as of December 1982) for facilities development and operation for the 750 MMB underground storage program is $3,402 million in nominal dollars or $4.54 per barrel. This estimate includes

operation and maintenance costs for each site either through fill of the site or through FY 1988, whichever is later. Each year, a further year is added to the EAC to reflect recurring operation and maintenance costs, so the foregoing should be viewed overall as a conservatively high estimate of the true capital investment costs of underground storage.

The SPR underground storage program is being conducted in three phases. Phase I is complete and most of the funding investment for Phase II has been committed. Therefore, costs for implementation of a decentralized storage program are most appropriately compared to Phase III of the underground storage program.

Overall, Phase III is planned to consist of 210 million barrels in storage capacity, costing $1,191 million or $5.67 per barrel in nominal dollars (including projected inflation). This represents $900 million or $4.29 per barrel in real FY 1982 dollars. Phase III is planned to include development of a new SPR site at Big Hill, Texas, for 140 MMB in capacity, further expansion of the existing SPR site at Bryan Mound, Texas, by 40 MMB, and the further expansion of the existing West Hackberry, Louisiana, site by 30 MMB.

There is substantial variance among Phase III components in terms of average cost per barrel. If a decentralized storage effort were undertaken in lieu of portions of Phase III, the underground storage costs foregone would depend on the scale of the underground storage displaced. For purposes of this analysis, three different ranges of underground storage would be considered:

(1) A 100 MMB-140 MMB decentralized alternative could result in cancellation of Big Hill site development. Considering funds already committed to Big Hill and varying levels of management reserve use for Big Hill, the per barrel cost range to compare to above-ground storage costs would be $5.45/bbl to $6.54/bbl in nominal dollars. In real FY 1982 dollars the equivalent range would be $4.04/bbl to $4.88/bbl.

(2) A 10 MMB-40 MMB decentralized alternative could result in the deletion of storage caverns from the Big Hill or West Hackberry sites, but would likely not affect the total infrastructure investments in those sites. At West Hackberry, the average per barrel costs for such incremental caverns is estimated to be $2.37/bbl to $3.31/bbl in nominal dollars and $1.67/bbl to $2.27/bbl in real FY 1982 dollars.

(3) A decentralized alternative of less than 10 MMB would likely be accommodated by reducing the sizes of one or more caverns rather than the deletion of a full cavern. In nominal dollars, the incremental costs of cavern size modification is estimated to be $1.20 to $1.33 per barrel equivalent to $.70/bbl to $.80/bbl in real FY 1982 dollars.

Therefore, a major element of comparisons of the costs associated with centralized and decentralized storage is not the simple alternative of RPR capacity, but the comparison of the full cost of the alternative RPR capacity with the marginal cost of developing the last increment of SPR Phase III. Such a comparison greatly favors the centralized program even when existing surplus storage capacity is proposed for the SPR.

Senator WARNER. Thank you very much, Senator.

Mr. Secretary, we dwell a great deal on the drawdown applications for domestic uses. Nevertheless, drawdown is also important to the U.S. Military Establishment.

Would you outline what provisions there are now for the U.S. Military Establishment to participate in that drawdown?

Mr. VAUGHAN. There is no specific application for the U.S. military in the strategic petroleum reserve drawdown plan, except as a purchaser. That decision was made with the drawdown plan, and the report was drafted by an interagency group that was cochaired by myself and a member of the National Security Council staff.

Specifically, the SPR by law, as I understand it, is a domestic reserve and is not a Defense Department asset, per se. I believe the Congress made that determination.

Obviously, if we get in a situation where war is imminent, then I would expect the President to seek congressional change. So the matter certainly has been considered, sir, with the National Security Council involvement.

Senator WARNER. Later today we will be hearing from a witness, Mr. Montgomery, from Saltville, Va. It is my understanding that he went down personally to examine that facility. Would you advise the committee with respect to its suitability for a contingency reserve site?

Mr. VAUGHAN. We did visit that site, Senator, Mr. Furiga and I, personally. We did not feel that it was a suitable site for a project for inclusion in the Strategic Petroleum Reserve.

It is located some 300 miles or thereabouts from the coast so the transportation would have to be by rail and we have sufficient facilities already in the program plan to carry the program to the full 750 million barrels. We did not see an incremental justification to warrant changing those basic plans and moving to this site.

Senator WARNER. Apart from the transportation issue, what about the physical capacity of this natural cavern?

Mr. VAUGHAN. I have forgotten at the moment how big the site potentially was. It was at the very lower range of size that we thought possible to give us from a scale factor the right kind of cost.

There are other sites that are much larger and, of course, the operating cost, the staff cost, the security cost, as unit costs on a large volume are much lower. My recollection is that this particular project was at the very low end of that range. I will be glad to furnish for the record the study we did of that, Senator.

[The requested information follows:]

26 FEB 1982

Mr. Randall F. Montgomery
President
Saltville Underground Storage Company
82 April Wind South
Montgomery, Texas 77356

Dear Mr. Montgomery:

Former Governor of Virginia, John N. Dalton, has provided to the Secretary of Energy, copies of your economic analysis of the proposed utilization of the Worthy Mine in Smyth County, Virginia, for crude oil storage. The Secretary has asked me to review this information and reply to you as to the Department's position on your proposal to utilize the mine as part of the Strategic Petroleum Reserve.

We have conducted an in-depth review of the comparative analysis of cost-effectiveness of oil storage and transportation for the Worthy Mine versus gulf coast salt domes, provided by your company and the Norfolk and Western Railway Company. There were several issues on which we differed or were missing in your comparative analysis, such as mine conversion costs salt dome storage development costs, rail transportation costs, and future operations costs. These are discussed in detail in the enclosed analysis.

Our review of your proposal and the additional information provided by Mr. Dalton, in conjunction with consideration of other pertinent elements, has led us to conclude that it would not be cost-effective at the present time to develop the Worthy Mine to meet Strategic Petroleum Reserve requirements for the east coast. Further, we believe the existing Strategic Petroleum Reserve sites can adequately supply refineries serving the east coast should severe oil supply interruptions occur in that region.

I trust the enclosed review and findings sufficiently document our current position with respect to economic feasibility of the Worthy Mine for Strategic Petroleum Reserve crude oil storage. Should future policy or decisions require a reevaluation of our posture on storage locations, we will, as appropriate, reconsider your proposal for the Worthy Mine.

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Your continued interest in the Strategic Petroleum Reserve is sincerely appreciated. If I can be of further assistance, please let me know.

Sincerely

[SIGNED BY]

R. D. Furiga
Deputy Assistant Secretary
Strategic Petroleum Reserve
Environmental Protection, Safety,
and Emergency Preparedness

Enclosure

cc: Mr. John N. Dalton
McGuire, Woods & Battle
1400 Rose Building
Richmond, Virginia 23219
(w/enclosure)

ENCLOSURE

Cost Effectiveness of Worthy Mine to Meet SPR Requirements for East Coast

The Strategic Petroleum Reserve (SPR) Office has reviewed Saltville Underground Storage Company's and Norfolk and Western Railway Company's analysis of the cost-effectiveness of oil storage, to meet east coast requirements, at the Worthy Mine as compared to gulf coast salt domes. The SPR's comments and comparative analysis are provided below.

Worthy Mine Conversion Cost - The conversion of the Worthy Mine was quoted to cost fifty cents ($0.50) per barrel. The basis for this number was not qualified as to (1) the inclusion of land, design, and management costs, (2) the base year or escalation assumptions for the estimate, or (3) the ultimate mine ownership. Preconversion engineering and geotechnical activities will be required to determine mine integrity for oil storage, and environmental impacts of development will have to be assessed. These activities are estimated to cost nearly $1 million and consume between 18 to 24 months prior to initiation of any mine conversion activities. The Department of Energy's mine conversion cost experience for the Weeks Island Mine (excluding pipeline construction) was $1.08 per barrel; land acquisition added another $0.42 per barrel, totaling $1.50 per barrel. This cost was for a 75 million-barrel facility in 1978 and 1979. It is quite likely that conversion costs for the 21.5 million-barrel Worthy Mine, in 1981 dollars, would not be less than $1.50 per barrel due to economics of scale and 3 years of price escalation.

Salt Dome Storage Cost - The Department's gulf coast storage cost was quoted as $6.35 per barrel based on the Strategic Petroleum Reserve Annual Report of February 16, 1981. However, we were unable to locate or reconstruct that figure from our 1981 Annual Report. The SPR Phase I storage cost, which consisted of acquisition and conversion of existing salt caverns and mines and construction of distribution pipelines, averaged $3.53 per barrel. Expansion of storage capacity at these existing sites costs between $2.00 to $2.50 per barrel as demonstrated in Phase II and III estimates. The cost of the Worthy Mine development should be compared to the cost of an existing site expansion at $2.25 per barrel since it is not economically feasible to construct a new site for storage capacities under 50 million barrels.

Rail Transportation Cost - The Worthy Mine cost analysis provided for leasing a total of 675 tank train cars at $11,040 each to reduce overall rail transportation costs. This lease cost was included at $0.35 per barrel during the fill cycle, but omitted for drawdown operations. DOE has two concerns relative to the tank train concept: (1) the tank car availability and leasing arrangement to support an emergency drawdown; and (2) the tank car loading and unloading rates necessary to support a 150-day drawdown objective. We calculated that fill and drawdown of the Worthy Mine would require 39,020 tank cars or 710 55-car trains. Based on a 5-car unloading rate of 2500 gallons/minute, it would require approximately 300 days to fill or drew down.

Tanker Transportation Costs - Transportation costs were based solely on tanker movements from Sullom Voe, Shelland Islands, Scotland; however, North Sea Oil represented only 25 percent of our strategic petroleum reserves. If the assumptions are changed to evaluate VLCC and ULCC cargos from the Mideast to the Bahamas for lightering operations, or PEMEX cargos from Mexico, any tanker transportation cost advantage would disappear.

Annual Operations Cost - A new SPR site requires an additional commitment in terms of future site operation and maintenance costs. The Worthy Mine would require site operators, system maintenance, security forces, etc, to maintain operational readiness in case of a national emergency drawdown. The SPR assumes a nominal 20-year operation period for evaluating operation costs.

Based on the aforementioned items, a revised storage and transportation comparative cost analysis was made and is presented below. As shown, we project a life cycle cost of $13.22 per barrel for developing 21.5 million barrels of storage at Worthy Mine versus $8.24 per barrel for expanding one of our current sites. If we consider 5 fill and drawdown cycles, as stated in the SPR design criteria, the cost spread would increase by another $8.76. Therefore, it is not considered cost effective at the present time to develop Worthy Mine to meet SPR requirements for the east coast.

COST COMPARATIVE ANALYSIS
(All costs in constant 1981 dollars)

	WORTHY MINE $/BBL	GULF COAST DOME $/BBL
STORAGE DEVELOPMENT COST		
PLANNING/ENVIRONMENTAL	1/ ___	___
FACILITY CONSTRUCTION	2/ $ 1.50	3/ $ 2.25
PIPELINE CONSTRUCTION	.16	(EXISTS)
RAILHEAD CONSTRUCTION	.12	
	$ 1.78	$ 2.25
TRANSPORTATION COST		
FILL (Sullom Voe to Site)	4/ 5.29	4.28
DRAWDOWN (Site to East Coast)	5/ 2.89	1.71
	8.18	5.99
TOTAL	$ 9.96	$ 8.24
OWNERSHIP COSTS		
SITE OPNS & MAINTENANCE (20 years)	6/ $ 3.26	(EXISTS)
TOTAL	$13.22	$ 8.24

Notes

1. Worthy Mine preconversion costs: (Not included in analysis)

Development of Mine De-Watering Plan	$ 35,000
Pump Procurement & Installation	100,000
De-Watering Operations (7-months) (Not including water treatment facilities)	240,000
Mine shaft Hoisting Equipment Rental	15,000
Survey & Inspection of Mine	75,000
Preliminary Engineering Design	50,000
Environmental Assessment & EIS (18 months)	400,000
	$915,000

2. Worthy Mine conversion cost based on DOE cost experience for Weeks Island Mine conversion (Includes land, design, construction & management)

3. Gulf coast dome construction cost based on existing site expansion by solution mining 21.5 million barrels of storage.

4. Transportation Cost includes:

Tanker (Sullom Voe to Norfolk)	$3.00
Terminaling	.20
Rail Car Rental	.35
Rail Transportation	1.74
	$5.29

5. Transportation Cost includes:

Rail Car Rental	.35
Rail Transportation	1.74
Terminaling	.20
Barging (Norfolk to Refineries)	.60
	2.89

6. Ownership Cost based on an estimated operational and maintenance cost per site of $3.5 million per year.

$$\frac{\text{Ownership cost}}{\text{Barrel}} = \frac{\$3.5 \text{ million}}{\text{year}} \times 20 \text{ years} \times \frac{1}{21.5 \text{ million barrels}}$$

(All other costs are consistent with Norfolk and Western Railway Company's comparative analysis)

Senator WARNER. Mr. Secretary, I would appreciate it if either you or a member of your staff could be present at the time the witness is giving his direct and then questions from the members of the Committee.

Mr. VAUGHAN. Yes, sir.

Senator WARNER. Senator Bradley.

Senator MATSUNAGA. Will the Senator yield on this particular point? As I understand it, Secretary Vaughan, you are saying that the distance from the coastline is 300 miles.

Was that the major consideration, as opposed to the facility itself, in your decision on whether you could convert the mine into an adequate storage site?

Mr. VAUGHAN. It was both, Senator. But virtually every other site we have is capable of going by ship or pipeline, which is the high volume way to ship oil. This site has neither capability without a rail length of some 300 miles.

Senator MATSUNAGA. So you think 300 miles by rail would be too great a distance, but 9,500 miles of shipping from Hawaii to storage is not to great. That is the conclusion I must arrive at, and it amazes me. Thank you.

Senator WARNER. Senator Bradley?

Senator BRADLEY. Thank you, Mr. Chairman. Let me ask you: Were you disturbed by the GAO report?

Mr. VAUGHAN. I certainly, as a member of the administration, would rather that we reach the decisions and submit a deferral if that were our decision, rather than have it done before we reached a decision.

Senator BRADLEY. Why didn't you?

Mr. VAUGHAN. Because the Secretary has not completed his discussions inside the administration on this subject and is not prepared to make that decision quite yet.

Senator BRADLEY. You don't think the GAO report precipitated those discussions? I mean the GAO report had been developing over a period of time. They were looking at some of the same data that you were looking at. They recognized that the clock is ticking on the budget.

Why didn't you recognize it at about the same time instead of waiting for their report to reach the public and deciding you needed to convene an interagency decisionmaking body?

Mr. VAUGHAN. I don't think that is an accurate recitation of events, Senator. Certainly we were aware of the GAO study and fully cooperated with the GAO. Many of the numbers in that study basically were furnished by us and confirmed by GAO. We certainly had recognized that the clock is ticking. But as you know, the Secretary told this Committee when he was here in March that he wanted to personally work on this matter and that he has attempted to do. As you also know he has had quite a few other things on his plate, not the least of which is natural gas. I can only tell you that he is personally pursuing the matter.

We are prepared, however, to implement the law. He has issued orders from the very beginning to me to be prepared to comply with the law, and we are so prepared.

Senator BRADLEY. So do you expect the Secretary will be sending a deferral notice to the Congress prior to or at least slightly after GAO?

Mr. VAUGHAN. I would expect, Senator, that the Secretary would like to convince the Congress that we should fill at capacity. That is what he is interested in trying to negotiate with the Congress.

If he fails in that I would expect him to submit a deferral but I am not positive of that until he makes such a decision.

Senator BRADLEY. What is the highest practical fill rate for 1983?

Mr. VAUGHAN. 220,000 barrels per day is the highest practical fill rate in our judgment.

Senator BRADLEY. Given all available funds?

Mr. VAUGHAN. If we could use all the funds it would be 288,000 barrels per day.

Senator BRADLEY. So why isn't that the highest practical fill rate in accordance with previous decisions by Congress?

Mr. VAUGHAN. Because we believe that it would be imprudent to engage in interim storage at a cost of roughly $90 million for a year's storage at the volumes we would have to store. We believe it would be imprudent to move to a fill rate of in excess of 500,000 barrels per day for the remainder of the year which would be necessary to achieve an average fiscal year 1983 rate of 288,000 barrels per day. And we believe in those circumstances we would be affecting the oil market and we most surely will affect the market for interim storage.

Senator BRADLEY. So basically you would disagree with the DOE General Counsel.

Mr. VAUGHAN. I do not disagree with his opinion, Senator, no, sir.

Senator BRADLEY. You do not.

Mr. VAUGHAN. I believe it states the law correctly.

Senator BRADLEY. You think that there is some other programmatic issue here.

Mr. VAUGHAN. Yes, I think that——

Senator BRADLEY. So even though the law states that you should fill at a rate of 220,000 or as much as you can fill using available funds, you have decided that the programmatic importance of affecting the oil market takes precedence.

Mr. VAUGHAN. Let me go back a moment; 220,000 barrels per day in my judgment is practical because it keeps you at capacity. Anything above capacity forces you into a rental situation which we believe is not cost justified.

In addition, Senator, quite candidly the problem here, in this administration's judgment, is a budgetary problem and I think we have made that clear from the very beginning.

It is not simply the amount of money for the interim storage, it is also the rather massive amount of oil acquisition funds that will then be incurred to meet that level. It is over that subject, that gap that the Secretary of Energy hopes to be able to negotiate with the Congress.

In the event he is unsuccessful, he will either submit a deferral or we will implement your instructions even though we don't agree with them.

Senator BRADLEY. Do you believe what the GAO said about the brine levels and the SPR and how removing the brine could increase the capacity is correct?

Mr. VAUGHAN. We have already taken that into account, Senator. Yes, I agree with that. We furnished——

Senator BRADLEY. Do you believe that removing the brine——

Mr. VAUGHAN [continuing]. That information.

Senator BRADLEY. You could obtain another 3.9 million barrels capacity on a temporary basis?

Mr. FURIGA. Senator, yes, we can but it takes quite a bit of flexibility away from the program.

Senator BRADLEY. OK. Thank you. So that the response as to why you are essentially not spending the money, that it has alread been allocated to fill the reserve, is budgetary?

Mr. VAUGHAN. Absolutely, Senator.

Senator BRADLEY. So that the 1984 off-budget request of $583 million for SPR is a 64-percent drop from 1983 and an 80-percent drop from the 1982 appropriation. Is that not correct?

Mr. VAUGHAN. I think that is correct, sir.

Senator BRADLEY. Do you continue to believe the Strategic Petroleum Reserve is the cornerstone of the Nation's energy emergency preparedness policy?

Mr. VAUGHAN. I think the cornerstone is the free market. But a very important next part of that program, and a vital part, is the Strategic Petroleum Reserve as a supply supplement.

Senator BRADLEY. Don't you think your actions betray your intentions?

Mr. VAUGHAN. No, sir, I do not. I believe that we have in this administration rigorously pursued this program, built it to a much higher level than what it was when we inherited it. Our judgment at this point is that the risk to this country's security and welfare through massive budget problems is more severe than incremental benefit gained by staying at the levels we had previously thought.

It is in no way a change, in our opinion, of the value of the program. We simply think that in time we can afford to take the risk here rather than elsewhere.

Senator BRADLEY. You have stated that you agree that there is 3.9 million spare capacity in the existing caverns with the brine removal. You have also said that the reason you are not going above 220,000 barrels a day is that you don't want to go to interim storage.

It is possible to fill above 220,000 barrels a day with the spare capacity from the removal of the brine. Why then won't you go above 220,000 barrels a day?

Mr. FURIGA. Senator, that spare capacity—I don't like to call it oil capacity—in the sump portion of the cavern and it was never intended for oil storage. For a short period of time, for 2 or 3 years, we could displace some of the brine there and put oil in it. It is not something I would do if I didn't really have to do it, from an engineering standpoint, because I am going to have to take that oil out of there at some point in time.

Senator BRADLEY. From a cost effective standpoint?

Mr. FURIGA. If I were forced to interim storage, I would certainly use that sump capacity because it would be a lot cheaper than interim storage.

Senator BRADLEY. You say that you could use that capacity on an interim basis for 2 or 3 years.

Mr. FURIGA. That is correct, sir.

Senator BRADLEY. At the end of 3 years, how much more total capacity is planned for the SPR?

Mr. FURIGA. That would be at the end of fiscal year 1986, I believe it is around 545 million barrels.

Senator BRADLEY. So, in other words you could use the caverns for spare capacity; and by the time you could no longer use them, by your own testimony which is 2 to 3 years, you would have another 500 million barrels of capacity available for the oil. So, what is the magic about 220,000 barrels and no higher?

Mr. FURIGA. That is our fill to permanent capacity. We define permanent capacity as capacity that we would normally use. We don't define that sump capacity in that 220,000.

Senator BRADLEY. That isn't what your own General Counsel states nor what Mr. Vaughan has said the law is, that you fill rated 220,000 and use of available capacity.

Mr. VAUGHAN. Senator, let me come back to that a moment. The administration desires for budget reasons not to fill beyond its permanent capacity and that happens to be 220,000 barrels per day. In fact that is how that number got into the act last fall.

Senator BRADLEY. What is the fill rate proposed for 1984?

Senator WARNER. Senator, if you would yield, I——

Senator BRADLEY. Could I just finish, Mr. Chairman, just 2 more questions?

Senator WARNER. All right. I was just going to explain I am going to meet with the Secretary this coming week and request that the administration report back to this committee with a detailed memorandum on what they feel is the highest practicable fill rate for SPR.

I am going to frankly admonish them in the preparation of this document to be in contact with GAO and the committee staff, both minority and majority, because we have got to have these answers.

I have ascertained that the Secretary was not able to get a debriefing from the Secretary, as he said, to corroborate his representation earlier that following the cabinet meeting they weren't able to do it.

Senator BRADLEY. Mr. Chairman, I think that would be a very important initiative and I salute you for that. Let me just say how this sounds to me, Mr. Vaughan, since the buzzer has rung and we will have to go vote.

This sounds to me like the same story the Carter administration brought to the Congress, the same story now that the Reagan administration is bringing to Congress, which is, on, yes, we believe the Strategic Petroleum Reserve is central to our security but we are not going to spend the money to provide that security.

The Congress has on any number of occasions rejected both administration when they proposed to essentially gut the core of emergency preparedness. There is one in the administration that asserts that it is any less likely that an interruption in oil supply would occur today in the Persian Gulf than it was 3 to 4 years ago.

We have slightly more oil in the reserve. But indeed if you believe it is enough why don't you propose to reduce the total maximum capacity from 750 million to something less?

Your refusal to do that indicates that you continue to hold 750 million as a goal. But you refuse to fill to reach that capacity. My hope,

subcommittee and also the chairman of the full committee, who have and it is my expectation with the leadership of the chairman of this time-and-time again indicated their commitment to this program and to emergency preparedness, that no administration, whether it was Jimmy Carter or Ronald Reagan, will be able to gut the program that is central to what I think is our energy security.

So I thank you for your testimony. And I thank the GAO for their analysis. Mr. Chairman, if I could, I would like to be able to submit to the record a series of questions to the GAO that they could respond to in greater detail in writing. Thank you.

Senator WARNER. Senator, that will be made available to you. We want to thank you, personally, for your watchdog position on this issue for the 4 years that we have been privileged to serve here together in the U.S. Senate.

Mr. Secretary, unless there are further questions, I intend to provide my questions to you for the record because I am quite anxious to try and hear from the other witnesses, and we will hear them despite the interruptions.

Thank you, Mr. Secretary. We will now proceed——

Mr. VAUGHAN. Per your request, Mr. Chairman, a member of the Strategic Petroleum Reserve staff will be here to hear this testimony as it is given from these other witnesses.

Senator WARNER. Thank you, Mr. Secretary. We will now hear from Mr. Van Arsdall, vice president, Member Services and Energy, National Council of Farmer Cooperatives.

Mr. Van Arsdall, we are delighted to have you with us this morning. I have spent a good deal of time myself in agriculture, and am a member of cooperatives, so I suppose that I am one of your subscribers. And I am delighted to have you come forward.

Mr. VAN ARSDALL. That means that I work for you, Mr. Chairman.

Senator WARNER. That is fine.

STATEMENT OF R. THOMAS VAN ARSDALL, VICE PRESIDENT, MEMBER SERVICES AND ENERGY, NATIONAL COUNCIL OF FARMER COOPERATIVES

Mr. VAN ARSDALL. In the interest of time, our full statement is submitted for the record, and I would like to spend a short time in highlighting some of our comments.

Regarding the Strategic Petroleum Reserve fill, the National Council enthusiastically endorses the policy as set forth by Congress in EEPA. We are disappointed by the recent administration record, the sharp decline in the fill rate, the alarming increase in the purchase of problem crudes.

We view the record to date as a serious violation of legal obligations, and a blatant breach of a delicate compromise reached between the Congress and the administration.

I would like to spend the time available to me today to focus on the Strategic Petroleum Reserve drawdown policy. In searching for the most appropriate and effective use of SPR during a crisis, we think that it is vitally important that the altered decisionmaking behavior of individuals who comprise both the petroleum industry and the user

community when placed under the uncertainties and stress of an oil shortage be understood.

If inventories are tight, a shortage can occur in the United States as soon as news of the event overseas hits the front page. Both the petroleum industry and end-users attempt to stretch out existing supplies and rebuild low inventories in anticipation of a larger or longer shortage.

Those who lose their supplies in this situation and find themselves short in this environment find it extremely difficult if not impossible to purchase additional supplies regardless of their ability to pay.

In normal times, a nickel per gallon premium elsewhere might generate a corporate decision to sell outside one's own system. During shortages, there are a number of significant forces which alter this decision process radically.

Oil companies for obvious reasons are dedicated to protecting their own distribution systems and markets. They cancel off-system sales where possible, and even increase purchases in the spot market. They tend to place their jobbers in retail outlets on allocation fractions on their own during tight supplies, both to distribute shortfalls within their own system equitably, and for legal reasons.

Inventories already in hand may be held on a speculative basis. It is important to realize that inventory behavior is the reverse of what we would like it to be in dealing with emergency preparedness policy. For short-run economic reasons inventories are drawn-down to a minimum level for necessary operation with no thought as to whether contingency planning is an adequate level of preparedness or not.

It is an economic decision. And when a shortage comes on and your inventories are down, you start building up as rapidly as possible. Of course, all of these actions withhold petroleum from the market and exacerbate or even create shortages and rigidities within the system.

We think that the key to breaking this cyclically self-destructive cycle is through timely and effective use of the Strategic Petroleum Reserve tool offsetting shortages and reducing uncertainties and the panic mentality which can often exist at the onset of a disruption.

Now the SPR is only as good as the design of SPR drawdown policy, and that is why we are focusing on that today. It is this process which will determine whether legitimate national objectives can be accomplished. As we understand it, the philosophical basis for free market allocation and pricing of petroleum during a disruptionis that the shortage will generate price increases.

Those who need the fuel the most will therefore bid the most with needed supplies moving to areas of need. Those of lesser need will drop out of the bidding, thereby bringing demand into balance with supply. Prices will return to normal levels once the disruption is ended.

Now the National Council has several major concerns regarding the operation of these postulates in the real world during a shortage. The ability to pay does not match up with need. Shortages are not uniform on a regional basis. Prices which result do not return to previous levels, but tend to become semipermanent economic burdens. Everyone loses.

Congress and the administration itself undoubtedly would be forced to intervene excessively in the marketplace if prices rise significantly, or shortages persist for even a short period during disruption.

The application of these free market philosophies in the present SPR plan yields a number of components in the general process framework which the National Council believes will assure failure of the drawndown plan in meeting desirable national objectives.

There is no clear policy statement on when SPR drawdown would occur. The few indications which we can interpret suggest that it may be late rather than early in a disruption. By optioning SPR oil during a shortage, it is quite likely or certainly possible that the United States could become a price leader in the most undesirable sense.

It is possible that those refiners experiencing serious crude shortages may be unable to bid successfully in the option process. That bidding process is one big guessing game.

Senator WARNER. I am going to have to ask you to sustain for a brief period. I have to go to the floor again to vote. For those of you who might be interested, the particular votes now are on education, the question to add a billion or so dollars for the purpose of education, and the vote counts are varying by one or two votes. So every voice is needed.

[Whereupon, a short recess was taken.]

Senator WARNER. We will resume the hearing. Again, I tended my apologies to all of those present. Among the other problems that the Senate is experiencing at this time is the inability to provide for a traffic problem down in the tunnel between the Capitol and the new Hart Building. Every now and then the transportation system is in a state of collapse. My apologies. We are doing our best.

Mr. VAN ARSDALL. Thank you, Mr. Chairman.

As I was saying the option bidding process is one big guessing game with the end result unknown until the last moment when the awards are given. And those who will lose will be engaged in a frantic scramble with their customers suffering the immediate consequences.

Under present rules, the opportunity for daisy-chaining prices upward in the option system also exists. There are no restrictions on the universe of purchasers save the ability to pay. We think that major new distortions in the crude oil refining that product distribution system could develop quickly at the worst possible time, if the normal logistics of the crude oil movement are altered by an array of new purchasers.

After reading this script, we for a moment thought that we might be viewing the United States as a partner in crime with OPEC. Remember the increased prices which are generated in this process will stay with us for a long time. They are still with us from the last time. That leaves our economy as the big loser.

We have examined the spectrum of option variations, trying to find an improved modification which our members could conclude would work. And we found that while achieving a lesser of evils as possible, even under the most carefully designed plan that we could come up with, it had inherent deficiencies or fatal flaws which would prevent SPR drawdown from accomplishing intended national objectives.

Therefore, we are forced to reject the option approach, and we invite others to convince us that our conclusions are incorrect, that an option system can be adequately designed. We certainly have not seen one yet.

Briefly, the National Council's recommendations on improvements which would result in an effective policy tool are as follows. We see allocation as the only effective method of distributing SPR oil in an equitable manner which deals with regional imbalances and minimizes price increases.

Access should be limited to historical domestic processors. No speculative purchases should be allowed. The purchasers of the SPR oil should be required to refine it, and distribute the product into the marketplace in a timely manner. And refiners need access to suitable quantities of crude oil.

If they have access to something that they cannot run, they might as well have access to mud for all of the good that it does.

The price of allocated crude oil should reflect normal market conditions as much as possible in order to minimize the disruption driven price increases.

In conclusion, the National Council has carefully observed and participated in, where possible, the SPR policy development process. In reviewing DOE's efforts to develop the SPR drawdown policy to date and the results, we must cite the following examples briefly as an absence of adequacy in the process.

The absence of even the first public hearing which provides the opportunity for valuable give and take between the public and between those who are doing the planning on this critical policy, as well as the poorly run process of seeking public input through briefly drafted notices of inquiries and notices of proposed rulemaking.

We believe that there has not been a good faith effort to implement the intent of Congress in this process. We see a crisis of confidence emerging in contingency planning.

Is the SPR drawdown policy adequate? Well, we invite you to evaluate what is known, and what the problems are within what is known, and what is not known.

We suspect that you may well reach the same conclusions that we have regarding adequacy of the present plan. The progress which is made now between disruptions in advancing emergency preparedness capabilities will determine whether the next disruption becomes another crisis, yet another one, in which we are our own worst enemy, or a capably handled nonevent.

This issue is vitally important to the welfare of agriculture and the economy. And the National Council stands ready to work with this committee in pursuing every avenue necessary including limited legislation, if possible, with the objective of developing responsible and effective SPR policy.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Van Arsdall follows:]

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Before the
Subcommittee on Energy and Mineral Resources
of the
Energy and Natural Resources Committee
U.S. Senate

HEARING ON THE STRATEGIC PETROLEUM RESERVE

Statement of
R. Thomas Van Arsdall
Vice President, Member Services and Energy

May 6, 1983

Statement of
R. Thomas Van Arsdall
Vice President, Member Services and Energy
National Council of Farmer Cooperatives

Mr. Chairman and Members of the Subcommittee:

My name is R. Thomas Van Arsdall, and I am Vice President of Member Services and Energy with the National Council of Farmer Cooperatives. The National Council is pleased to have the opportunity to appear and testify before this Subcommittee on the Strategic Petroleum Reserve (SPR).

The National Council of Farmer Cooperatives is a nationwide association of cooperative businesses which are owned and controlled by farmers. Its membership includes 111 regional marketing and farm supply cooperatives, the 37 banks of the cooperative Farm Credit System, and 32 state councils of Farmer cooperatives. National Council members handle practically every type of agricultural commodity produced in the United States, market these commodities domestically and around the world, and furnish production supplies and credit to their farmer members and patrons. Two-thirds of United States farmers are affiliated with one or more cooperatives. The National Council represents about 90 percent of the more than 6,400 farmer cooperatives in the nation, with a combined membership of nearly 2 million farmers.

In brief, this statement addresses the following major points:

- SPR policy must point toward three objectives (1) minimizing adverse effects of regional and national shortages; (2) minimizing the economic impact of disruption-driven price increases; and (3) minimizing government intrusion through timely and effective response.

- The SPR must be filled aggressively with suitable qualities of crude, consistent with the provisions of EEPA.

- Behavior under the uncertainties and stresses of an oil crisis do not follow normal economic rules, and indeed inhibit marketplace adjustments.

- The present SPR Drawdown Plan contains serious deficiencies, including (a) the SPR as a "negative" price leader; and (b) a largely unrestricted universe of buyers.

- Major recommended improvements to the SPR Drawdown Plan include: (a) allocation on the basis of need; (b) access limited to historical processors; (c) require that crude oil be refined and product moved to marketplace; (d) use spot market prices as lead "trigger" indicator; (e) assure access to suitable qualities of crude; (f) set allocated price based on normal market prices, rather than disruption driven; and (g) conduct a thorough, actual drawdown test.

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The National Council believes that serious deficiencies and omissions which exist in present SPR policy are unacceptable and in conflict with existing law. If legitimate national objectives, including continued operation of agriculture, are to be accomplished, appropriate changes must be made--if necessary through legislation--clarifying the intent of Congress.

I. EMERGENCY PREPAREDNESS POLICY MUST COMPLEMENT BROADER NATIONAL OBJECTIVES

When considering the objectives of SPR policy and related emergency preparedness alternatives, the National Council believes that three essential policies should be kept in mind:

(1) Minimize and eliminate where possible the adverse effects of regional and national shortages, with a priority on maintaining essential services;

(2) Minimize severe damage to the national economy caused by the rachet effect of permanent, disruption-driven energy price increases; and

(3) Minimize the extent of government intrusion through timely and effective response.

The National Council has consistently endorsed decontrol of the domestic petroleum industry during normal market periods. Indeed, to the extent that the marketplace can deal adequately with disruptions, government should not interfere. Inventories, both in public and private hands, are key to successful market operations during stress. However, to the extent that the market exhibits signs of breaking down, either in the form of uncorrected regional shortages or rapid price escalations, effective emergency preparedness response procedures must be readily available for timely implementation.

By taking the least intrusive corrective actions at the right time, damaging impacts upon the economy and excessive intervention can be averted.

Regional shortages have spawned excessive government intervention in the product market, essentially because of poor management during market stress. The public outcry for action inevitably engenders a strong response from Congress--with few options available for immediate visible effect. Indeed, the process ultimately yields extensive product allocation and price controls.

This nation's destiny, in terms of both national energy policy and economic well-being, has been subject to the whims of the world petroleum market. Most disruptions affect considerably less than 1 million barrels per day of crude oil. Yet, history has shown that if inventories are tight, even a relatively minor disruption can more than double petroleum prices--permanently--with consumers and the economy as big losers, not the oil industry.

It is no secret that a major source of present economic problems has been the exogenous shocks on energy prices caused by periodic petroleum disruptions. It should also be self-evident that the one event which could destroy the fragile bridge to economic recovery is another unattended disruption, followed by sharp price increases.

II. SPR MUST BE FILLED AGGRESSIVELY

SPR a Viable Tool for First Time:

This Administration is to be commended for filling the SPR at unprecedented rates during its first two years in office. Oil reserves have jumped from less than 100 million barrels in place to approximately 300 million barrels presently. For the first time, the SPR exists as more than just a "last-ditch" military reserve. Substantial volumes are now available for offsetting shortages to varying degrees. As the SPR moves toward the next benchmark of 500 million barrels, the flexibility of use of the SPR in dealing with oil emergencies will expand dramatically.

Past programs were only able to "share" shortages, through extensive allocation and other devices. Such programs did little to mitigate the crisis mentality and panic buying which typically accompany a shortage. The major and overriding advantage of the SPR is that additional supplies can be injected into the system to offset shortages and sharply ease uncertainties.

High Fill Rate must be Maintained:

The National Council has long supported aggressive build-up of the SPR. We heartily endorse Section 4(a) of P.L. 97-229, The Energy Emergency Preparedness Act of 1982 (EEPA).

This section sets the minimum required fill rate at 300,000 barrels per day. If a finding is made by the President that compliance would not be in the national interest, the minimum required fill rate becomes 220,000 barrels per day. By filling the SPR at 300,000 barrels per day or higher, the Administration would arm itself more rapidly with an emergency preparedness response tool of potentially unlimited value. This nation is on the verge of having the power to rob foreign oil producers of the political and economic leverage which control of the incremental barrel has accorded them.

Therefore, the National Council must express its sharp disappointment regarding the Administration's actions over the past several months. First, the President elected to make the finding that filling the SPR at 300,000 barrels per day was not in the national interest. The fill rate was dropped to 220,000 barrels per day. Second, the actual fill rate for FY'82 was just 216,000 barrels per day--less than the statutorily-imposed minimum. Third, data for the first quarter of FY'83 reveal a large drop to just 173,000 barrels per day. Finally, the Administration has budgeted for a fill rate during FY'84 of only 145,000 barrels per day--less than half the rate called for in EEPA!

The National Council views these events as a serious violation of legal obligations--and a blatant breach of a delicate compromise painstakingly reached between the Congress

and the Administration last year on emergency preparedness policy. More importantly, these actions represent a major setback in this nation's quest for energy security.

Certainly, the temptation exists to lower the fill rate for budgetary considerations. Budget deficits are at record levels, and the last disruption seems but a distant memory. However, there appears to be no disagreement that this nation remains vulnerable to foreign oil disruptions. The tremendous cost and negative macroeconomic effects of another oil disruption overwhelm the "insurance" costs which filling the SPR represent.

Investment in the SPR is of comparable importance to funds spent on national defense. Indeed, a full SPR decreases the likelihood of a military confrontation in the oil-producing Middle East.

The National Council urges the Administration to continue taking aggressive advantage of the temporary glut in the world petroleum market, thus filling the SPR at what will ultimately be a lower cost to the American taxpayer.

Crude Quality Important:

Compounding our present concerns is DOE's stated intention to purchase only the lowest cost crude oil available. Based on recent purchases, we fear that this policy is being mistakenly translated into purchasing the lowest

quality, or problem, crudes. Crude oil is not a uniform commodity. Rather the characteristics and yields of different crudes vary widely. Refiners have varying capabilities to run different types of crudes. Although this flexibility is increasing, major limitations exist across the refining sector. It is vitally important that SPR fill policy be consistent with the needs and capabilities of domestic refiners.

Certainly, seeking the best prices for a suitable mix of crudes is desirable. However, if the recently observed trend translates into purchasing "problem" crudes that might have limited usefulness, then the effectiveness of SPR becomes sharply reduced (attachment A provides additional detail on crude oil quality purchase patterns).

Temporary Storage Should be Utilized:

A fill rate of 300,000 barrels per day would require the use of temporary storage facilities in the near term, until permanent facilities can be prepared. The National Council would urge expenditures necessary to enable a higher fill rate. Many facilities suitable for this purpose are now available at bargain rates. Indeed, both active and mothballed refineries have surplus storage capacity, in addition to that offered by idle tankers and underutilized pipelines.

Need for Regional SPR Undetermined:

There presently are insufficient data upon which a reasonable determination may be made regarding the effectiveness of actual SPR drawdown from existing locations in the Gulf, including the movement of petroleum to all of the regions of the United States. Until thorough testing of this capability in a real-world environment occurs, it is premature to judge whether regional reserves are necessary to establish an effective SPR program.

Should any need be established, rural areas in the Midwest and upper Great Plains--at the end of the petroleum distribution system--are most likely to prove to be deficient. Selective placement of limited amounts of crude oil close to inland refineries serving these remote markets may be necessary. 1/

The National Council does not presently recommend the establishment of significant reserves of refined petroleum products in consuming areas. Perhaps this aspect might be considered within the different context of pipeline transportation facilities, and their vulnerability to sabotage or disruption.

1/ *As the DOE progresses in its consideration of the need for regional petroleum reserves, and/or temporary storage, the National Council would be pleased to provide information regarding the availability of unused or under-utilized storage facilities in the farmer cooperative petroleum system.*

III. OIL CRISIS: BEHAVIOR UNDER UNCERTAINTY

Decision Equation Radically Altered During Shortages:

In searching for the most appropriate and effective use of SPR during a crisis, it is vitally important that the decision-making behavior of individuals who comprise the petroleum industry and the user community when placed under the uncertainties and stress of an oil shortage be understood. The 90-day lead time which is often spoken of between a disruption in an oil-producing country and the shortage at the retail pump in the United States is not matched by behavioral responses. If inventories are tight, a shortage can occur in the United States as soon as news of the event overseas hits the front page. Motorists start topping off their tanks, home owners fill their heating oil tanks, industrial users fill their storage, and farmers want their tanks topped off in anticipation of critically-timed operations. Refiners, jobbers and marketers attempt to stretch out existing supplies and rebuild low inventories in anticipation of a potentially larger or longer shortage.

Those who lose their supplies or find themselves short in this environment find it extremely difficult, if not impossible, to purchase additional supplies, regardless of their ability to pay. Contrary to free market economic theories, a refiner or jobber does not generally respond to normal market forces during shortages. In normal times, a

nickel-per-gallon premium elsewhere would generate a corporate decision to sell outside one's own system. During shortages, there are a number of significant forces which alter this decision process radically:

- Oil companies are, for obvious reasons, dedicated to protecting their own distribution systems and markets. No executive wants to sell off crude oil or product early in a shortage to make a small amount of money and risk not having sufficient volumes for his own system later on if the shortage persists.

- An oil company will also cancel off-system sales where possible, and even increase purchases in the spot market to rebuild inventories to high levels to protect against a possible prolonged shortage.

- Individual oil companies tend to place their jobbers and retail outlets on allocation fractions during tight supplies, both to distribute shortfalls equitably and for legal reasons.

- Inventories already in hand may be held on a speculative basis in anticipation that prices will go even higher and that more money can be made later.

Of course, all of these actions withhold petroleum from the market and exacerbate or even create shortages and stress within the system.

It is important to remember that the spot market for crude oil (or the incremental barrel) drives all petroleum product prices in a totally decontrolled market. Any major refiner can make more money by refining crude oil and marketing the products within its own system, rather than selling it to any other refiner. Whatever that other refiner is willing to pay essentially sets the new incremental barrel price, which in turn establishes the value of all oil. Modest price inducements are thus not likely to spawn movement of crude oil or product among refiners in a disruption-dominated market.

The key to allowing the marketplace to operate during a time of shortages, in a fashion that is not operating in a cyclically self-destructive manner, is to change these components of market behavior under a shortage psychology. This has been a difficult, if not impossible, process in the past. Extensive allocation and price controls were really the only options available. Essential services experienced shortages. Price increases which were spawned by shortages proved to be politically unacceptable, and arguably economically disastrous. So, the government intervened in the marketplace, with actions taken generally limited in their impact on behavioral patterns.

The Myth of Private Inventory Management:

A principal concern which has been stated on several occasions by those who are against providing too many specifics in an SPR drawdown plan is that the certainty provided by

such a plan will discourage the private sector from acting as companies and individuals to assure adequate self-help reserves against future emergencies. This was the same argument which was cited as a major reason for opposition to the Standby Petroleum Allocation Act of 1982, legislation which was vetoed by the President.

However, inventory behavior in the private sector since that veto has clearly illustrated that there is little or no relationship to the existence or absence of responsible emergency preparedness authorities. The bitter lessons learned from previous shortages quickly fade into the background as entrepreneurs face other more immediate and pressing problems. As they have struggled to survive in the face of record interest rates and a prolonged recession, the relatively vague threat of another oil disruption pales by comparison.

Inventories have dropped dramatically over the past year, changing the domestic glut to an overall inventory picture which falls well below historically accepted normal ranges. Even when the numbers are adjusted to reflect the overall reduction in demand, it is clear that inventories are dangerously thin. Only a mild winter has prevented late winter tightness of middle distillate stocks. Certainly, any surplus stocks are related to demand being lower than anticipated, rather than any conscious effort to maintain an emergency reserve. Such stocks will be liquidated as soon as possible.

Managers have attempted to minimize stocks of fuel, just as they have reduced supplies of other items in attempting to lower carrying costs. These inventories have been reduced to the absolute minimum level necessary to conduct normal operations.

In the spring of 1982, the absence of inventory on the farm, at the wholesaler, and at the refinery generated extensive spot shortages across much of the Midwest and Great Plains during spring planting. Everyone ultimately did acquire sufficient fuel supplies, although there were some anxious periods. The notable point about this event is that it illustrates how fragile rural supply lines are, even in the absence of an external disruption.

This is not to say that such actions have been irresponsible. For example, farmers are caught in a vicious cost-price squeeze. High interest rates last year translated into an $8-12 annual cost of storing a 42-gallon barrel of diesel fuel (about 25 cents per gallon).

Generally speaking, this inventory behavior is the norm rather than the exception across both the oil industry and the industrial community, and indeed in the commercial and the residential sector. The ultimate big losers are not the refiner, or the large industrial user, but rather all consumers in the form of shortages and higher prices during a disruption.

Unfortunately, private inventories will not be rebuilt until decisionmakers read that another shortage is developing which could threaten their supplies. If they are uncertain whether effective response procedures are in place, they are likely to repeat the mistakes of the past and attempt to rebuild inventories at exactly the wrong time--in essence creating the shortage through their actions. To avert this behavioral pattern, it is important to clearly establish SPR policy and any other emergency response procedure which may be contemplated.

IV. DEFICIENCIES IN PRESENT SPR DRAWDOWN PLAN

The SPR is only as good as the design of SPR drawdown policy. It is this process which will determine whether panic and uncertainty are reduced, price increases are mitigated, regional and national shortages are effectively offset, and excessive government intervention is avoided. The fundamental key is timely and effective utilization of sufficient quantities from the SPR as a response mechanism, <u>early</u> in the disruption. In this regard, the National Council must express its deep concerns about the Strategic Petroleum Reserve Drawdown Plan submitted to the Congress (DOE/EP 0073).

<u>Free Market Allocation Fails in Practice During Disruption</u>:

As the NCFC understands it, the philosophical basis for "free" market allocation and pricing of petroleum during a disruption is that (1) the shortage will generate price

increases; (2) those who need fuel the most will therefore bid the most, with needed supplies moving to areas of need; (3) those of lesser need will drop out of the bidding, thereby bringing demand into balance with supply; and (4) prices will return to "normal" levels once the disruption has ended.

The National Council has several major concerns regarding the operation of these postulates in the real world, during a shortage:

- The ability to pay does not match up with need. For example, the farmer as a price taker must bid for diesel fuel against Mercedes owners and industrial users capable of passing increases on.

- It has been shown that the oil industry will not allow prices to rise as rapidly, due to fear of public repercussion.

- Shortages are not uniform on a regional basis. Even if successfully bid for, fuel may not move in a timely fashion from the Northeast to a farmer in North Dakota, for example.

- Prices which result from this panic-bidding process do not return to previous levels, but tend to become semi-permanent economic fixtures. Everyone loses.

- Congress and the Administration undoubtedly would be forced to intervene in the marketplace if prices rise significantly or shortages persist.

Advance Planning Essential:

Administration officials have stated that it is impossible to anticipate the nature of the next oil emergency, and that it would therefore be essentially a waste of time to engage in development of a more comprehensive SPR drawdown plan. A similar argument is espoused when downplaying the need for analysis of possible scenarios. (It is perplexing to note that this same Administration stresses extensive advance planning and scenario analyses in the even more uncertain field of national defense.)

The National Council agrees that a certain degree of flexibility is a true strength in any emergency preparedness planning. Certainly in the past, excessive rigidities built into the regulations have inhibited adjustment to new developments. However, it is a serious error to attempt to equate flexibility with a lack of advance planning. The multiple effects of an oil disruption and a complex economy cannot be dealt with by simple answers. To defer a complex of potential procedural decisions until this nation is in the actual throes of a true shortage defies the lessons learned through past history. These decisions, if made in the political pressure cooker of a shortage, with no lead time, are likely to be as misguided and ineffective as past ad hoc "management by crisis" has been.

Indeed, before problems could be straightened out, it is almost certain that the Congress would take corrective action on its own, probably applying much more extensive, mandatory regulatory responses to the problem. In the meantime, agriculture and other major components of the economy could suffer serious injury unnecessarily. Potential benefits of an effective SPR plan would be largely and tragically negated.

Auction of SPR to Broad Universe is Counterproductive:

Even more disturbing than the absence of any advance planning on the details of implementation are several statements in the general process framework which the NCFC believes will assure failure of the SPR Drawdown Plan in meeting desirable national policy objectives.

- By auctioning SPR oil during a shortage, it is quite likely that the U.S. will become a "price leader" in the most undesirable sense, sending signals to OPEC and other producers.

- It is quite possible that those refiners experiencing serious crude shortages may be unable to bid successfully. The bidding process is one big guessing game, with the end result unknown until the last moment. Those who lose will engage in a frantic scramble, with their customers suffering the immediate consequences.

• Under present rules, the opportunity for "daisy chaining" prices upward would exist.

• There are no restrictions on the universe of purchasers, save the ability to pay. This opens up the process to foreign agents, speculators, and federal agencies. Even consumers of petroleum products who have never attempted to handle a barrel of crude oil, much less need the full range of products, can participate in the bidding process.

The DOE has been persistent in its suggestion that farmers could benefit from this broad universe by combining forces, purchasing SPR crude and arranging for processing agreements, as a means of securing needed product. This is certainly not the position of the National Council or any of its members. Bidders should be active participants in the oil business who are already familiar with the complexities of transforming crude into product and moving it to customers.

Major new distortions in the crude oil, refining and product distribution system could develop quickly--at the worst possible time--if the normal logistics of crude oil movement are altered by an array of new purchasers.

• There is no requirement that the crude oil be refined into product and moved to the consumer. Even refiners or marketers could hold stocks on a speculative basis. In terms of national policy, the reasons for creating the SPR would be totally defeated, absent this final step.

The NCFC is concerned that a straight auction of SPR would exacerbate regional shortages and rising prices, rather than contribute to their solution. This is particularly true if volumes offered for bid fail to offset the shortfall. For example, an independent refiner may have lost half of his supply as a result of the shortage, especially if purchases are from an oil-producing country in which the disruption originated. This refiner would be bidding to replace half of his supplies against a major oil company which may be replacing a few percent or rebuilding inventories. The major oil company is likely to be able to bid considerably more for that oil and roll it in with lower cost remaining contracts.

The end result could be similar to that which has emerged in the natural gas industry, where pipelines with large "cushions" of old, regulated gas are reportedly able to capture all incremental supplies of natural gas and still end up with a lower average cost. Even if the independent refiner does bid successfully, the price paid would undoubtedly be higher, and thus drive prices upward even more quickly.

V. RECOMMENDATIONS FOR EFFECTIVE SPR DRAWDOWN POLICY

The National Council would like to offer several recommendations which we believe would strengthen the effectiveness and credibility of the SPR.

• Allocation is the only effective method of distributing SPR oil in an equitable manner which deals with regional imbalances.

• Only domestic refiners, or historical processors, should have access to SPR oil.

• No speculative purchases should be allowed. Speculators cannot be allowed to benefit at the expense of taxpayers--higher petroleum product prices, maintained at these higher levels by foreign oil producers.

• Purchasers of SPR oil should be required to refine the crude oil and in turn inject the petroleum product into the marketplace. Any attempt to use SPR oil to build up private inventory stocks should be prohibited. Nor should a loophole exist in which purchases could be used to rebuild inventories, with SPR oil run instead.

• A mechanism should be developed which helps assure that a refiner has access to the type of crude oil required. The domestic refining industry is not a uniform monolith. Different refiners have varying capabilities to run specific qualities and types of crude oil.

The DOE has recognized this somewhat in its purchases and segregated storage of different types of crude oil, but not in its drawdown procedures. In response to a question following the March 7, 1983 Senate Energy Committee hearing, the DOE did state that its drawdown mix would reflect the nature of the foreign oil involved in the

disruption. This would seem to ignore the fact that majors suffering foreign losses are adept at capturing domestic supplies to offset the shortfall. In the past this has translated into independent refiners experiencing losses of their domestic supplies (usually sweet crude).

- Behavior of spot market prices, during a known disruption event, should be used as a lead indicator in the decision to trigger SPR drawdown. This is an early warning signal which reflects a composite of other basic factors in the marketplace, including private inventory levels, regional shortages, failure or inability of the refining and distribution system to adjust to shortages, panic purchases and expectation of future supplies.

- The price of allocated crude oil should reflect normal market conditions as much as possible, in order to minimize disruption-driven price increases.

- The official directly responsible for selecting and implementing such actions should be clearly identified in the Comprehensive Energy Emergency Response Procedures.

- Representatives of the petroleum industry and the user community should be consulted, both in the development of the drawdown plan and criteria and in the event of any implementation.

- A thorough, actual drawdown test should occur, to enhance confidence in the abilities of the SPR. This will contribute to a calmer environment in the event of shortages.

There is no evidence that the SPR drawdown process has been tested sufficiently to assure that the oil will be accessible to refiners serving various regions in a timely manner.

VI. CONSIDER AGRICULTURE'S UNIQUE NEEDS

In determining how SPR oil will be distributed, the National Council strongly urges the DOE to carefully consider the unique and special needs of agriculture.[2/] Rural areas are at the end of the petroleum distribution system and are more likely to be hit first and hardest. Such regional shortages left unattended can drive national policy responses, often more excessively than necessary. Indeed, the statutory authorities in EPCA pertaining to drawdown and distribution of the reserve specifically cite:

> "The administrator may, by rule, provide for the allocation of any petroleum product withdrawn from the Strategic Petroleum Reserve in amounts specified in (or determined in a manner prescribed by) and at prices specified in (or determined in a manner prescribed by) such rules. Such price levels and allocation procedures shall be consistent with the attainment, to the maximum extent practicable, of the objectives specified in Sec. 4(b)(1) of the Emergency Petroleum Allocation Act of 1973." [Sec. 161(e)]

Sec. 4(b)(1) identifies essential services and activities. Of particular interest to agricultural and rural needs are the following two paragraphs:

2/ *For a food system analysis, see "Energy Policies: Price Impacts on the U.S. Food System," USDA/EECS, 1979.*

"(C) maintenance of agricultural operations, including farming, ranching, dairy, and fishing activities, and services directly related thereto;"

"(F) equitable distribution of crude oil, residual fuel oil, and refined petroleum products at equitable prices among all regions and areas of the United States and sections of the petroleum industry, including independent refiners, small refiners, non-branded independent refiners, branded independent marketers, and among all users;"

The definition of agricultural operations has consistently been defined in past regulatory implementation to include not just farm use but activities necessary to process, preserve and transport agricultural products so that they are ultimately accessible to the consumer. Indeed, the legislative history which supported this statutory language in EPAA clearly stated this intent.

Even though the EPAA expired on September 30, 1981, the reference to the language contained in Sec. 4(b)(1) is still binding as an integral component of the statutory language and intent of EPCA.

We find it disappointing that plans submitted by the Administration thus far illustrate a clear willingness to allocate petroleum to Defense and foreign countries (directly or indirectly, under the IEA), while specifically rejecting even consideration of this option for absolutely critical sectors such as food production.

The national Council's position on this issue should not be misconstrued as advocating mandatory direct allocation of crude oil or petroleum product to agriculture as the first response to a disruption. An effective SPR drawdown program which provides true and reasonable access to suitable qualities and quantities of crude oil to refiners serving agricultural users would accomplish this objective in a far less intrusive way. Indeed, a system of timely SPR allocation to domestic refiners on the basis of need should be sufficient in most instances without necessarily specifying priority access to refiners serving agriculture.

Conversely, we do believe that an auction drawdown approach could quickly generate circumstances which would force emergency allocation of crude oil/product to the agricultural petroleum system. The SPR drawdown plan currently in place fails to meet the statutory obligation provided in Sec. 161(e) of EPCA, even indirectly. There certainly is no satisfactory indication of the information monitoring or SPR drawdown process which would be sensitive to the needs and potential difficulties of agricultural operations. The National Council strongly urges that this statutory obligation be addressed and met during revision of the SPR Drawdown Plan.3/

3/ *Attachement B provides additional background on the role of energy in agriculture, the role of the farmer cooperative petroleum system and the high vulnerability of rural areas to disruptions.*

VII. SPR POLICY--A VITAL ISSUE WHICH MUST BE ADVANCED

The National Council is somewhat perplexed by the seemingly paternalistic, "Big Brother" attitude which appears to pervade the Administration on this issue. Our members are helping to pay for the SPR, and the agricultural community will be directly affected in a profound way by the degree of success or failure of utilizing the SPR during a disruption. We believe that the Congress and the public have a "right to know," at least enough to evaluate the adequacy of SPR plans. The details are not as important at this stage as is the soundness of basic objectives, principles and structural process.

The National Council's oversight message is two-fold: Far too little information has been made for anyone to determine whether this nation's SPR policy is adequate; and (2) the few policies and principles which have been delineated leave us deeply concerned. A "crisis of confidence" exists in that there remains large room for doubt regarding the effectiveness of contingency plans.

The progress which is made now, between disruptions, in advancing emergency preparedness capabilities may not be glamorous. But, it will determine whether the next disruption becomes yet another crisis in which we are our own

worst enemy--or a capably-handled non-event. While falling oil prices are welcome news, they could have a destabilizing effect on an already volatile Middle East. The real possibility exists of another disruption at any time. We must not waste the opportunity before us.

In closing, the National Council appreciates this opportunity to share our views with the Subcommittee. We sincerely hope that these observations are helpful to your deliberations and evaluation of the status of SPR policy.

We regard the "state of the art" in SPR policy as inadequate, fundamentally flawed, and inconsistent with the intent of Congress as declared in EEPA. This issue is vitally important to the welfare of agriculture and the economy, and the National Council will continue to pursue every avenue necessary with the objective of developing a responsible and effective SPR policy.

May 6, 1983

ATTACHMENT A

Strategic Petroleum Reserve
Purchased Crude Oil Qualities

Is Maya Crude Oil Montezuma's Revenge?

In 1982, the composition of SPR purchases changed dramatically towards poor quality, high sulfur content, problem crude oils.

As of December 31, 1982, 12.4% of the crude oil purchased for SPR was either Mexican Maya or a blend of Maya and Isthmus whose qualities meet none of the six previously established specifications. The established crude oil purchase categories, illustrated in Attachment A, may be subtitled high sulfur content or sour (I), low sulfur content, or sweet (II-V), and Alaskan North Slope (VI).

In 1981, the U.S. Defense Fuel Supply Center negotiated a five year 50,000 BPD contract with PEMEX, the Mexican National Oil Company, providing for the supply of Isthmus and Maya crude oils to the SPR. The volumes are fixed at 75% Isthmus and 25% Maya. Separately, on August 24, 1982, in order to support the Mexican peso, the U.S. loaned Mexico $1 billion in return for approximately 100,000 BPD of additional Isthmus/Maya crude oil to be delivered over a year's period. As a result of SPR's reduced funding and these two commitments, very little, if any, non Mexican crude oil will be acquired between now and the end of FY 1984.

As a result of increased asphaltic oil purchases, the percentage of multi-purpose Type II-V sweet oils in the reserve has decreased from 46% at 1980 year end, 41% at 1981 year end, to 34% by 1982 year end, with the year end 1984 forecast to be 23%. Maya and Maya blends at that time are forecast to be the largest part of the SPR, 40-42%.

Maya, even blended with moderate Isthmus volumes, has a substantially lower quality than either Type I or VI oils, and its purchase dictates it be segregated to prevent contamination. Maya is generally recognized to be a low gravity, high sulfur, high salt and metals content asphaltic oil processed by very few U.S. refiners.

It is possible for a few refineries to convert Maya's 44% residual oil yield into one half that much transportation fuel. The oil's extremely high sulfur, vanadium and nickel contents prevent such residual's sales as even marine bunkers. As a result, Maya residuals are usually converted to petroleum coke. In addition to cokers, facilities processing significant Maya require multistage desalters with gas oil desulphurizers and demetalizers.

It would appear that only two or three non-asphalt refineries can handle Maya type oils without substantial dilution. Maya is most often blended with 32.8° API, 1.5 wt% sulfur content Isthmus to achieve mixtures in the 25-28° API, 1.8-2.7 wt% sulfur range. One of the few Gulf Coast refineries receiving substantial volumes of undiluted Maya, imports four times that volume of sweet, low sulfur content oils from the United Kingdom and Trinidad.

Although Mexico replaced Saudi Arabia as the single largest source of U.S. imported oil in the last half of 1982, a restructuring of OPEC official prices could reverse that phenomenon. Maya crude posted at $25/bbl was very competitive with heavy, sour, officially priced OPEC alternatives. The approximate 5% of recent U.S. refinery runs which have been Mexican oil represent 22% of that country's production. Coincidentally, seven Arab OPEC countries supply 5% of the combined U.S. petroleum products' needs. These exports to the U.S. amount to 7% of the countries' current production and a significantly smaller percentage of their potential output.

The continuing world surplus of crude oil and available steep price discounts should be taken advantage of in order to purchase oils which permit the maximum response flexibility, not the least. Strategic reserves of Maya and Maya blends can not be readily substituted for lost supplies, except from Mexico, Venezuela and perhaps the Persian Gulf Neutral Zone. While Mexico's supplies represent a welcome Western hemisphere non-OPEC alternative, one must question why those supplies aren't equally valuable if left in Mexican reservoirs. Maya, heavy Venezuelan, and other asphaltic crude oils appear to be bargain purchases only if one considers their purchase prices, and ignores the dramatic loss of response flexibility accompanying such acquisitions. SPR procurement should be redirected toward the originally identified Type I-VI oils.

3/4/83

Table 4

Volume and Percentage of the Different Types of Crudes Delivered to the SPR as of September 30, 1982

	Type I (note a)	Types II-V (note b)	Type VI (note c)	Type VIa (note d)	Maya (note e)	Total
	(millions of barrels)					
Volume of oil delivered to the SPR	121.4	98.8	31.4	16.6	9.7	277.9
	(percent)					
Percentage of total oil delivered to the SPR	44	36	11	6	3	100.0

a/High-sulfur crudes (maximum 1.99 percent sulfur content) with an API gravity range of 30 to 36 degrees. Type I oil includes Arabian light and Isthmus crudes.

b/High-quality crudes with a light, low-sulfur content (maximum .5 percent sulfur content) and, with an API gravity range of 30 to 45 degrees. These types include some North Sea and West African crudes.

c/Type VI was established for Alaskan North Slope crude, an intermediate-sulfur crude (maximum 1.25 percent sulfur content) with an API gravity range of 26 to 30 degrees.

d/Type VIa was established for the Maya/Isthmus blend under the PEMEX contract. The blend is a high-sulfur mixture with an API gravity of at least 28 degrees.

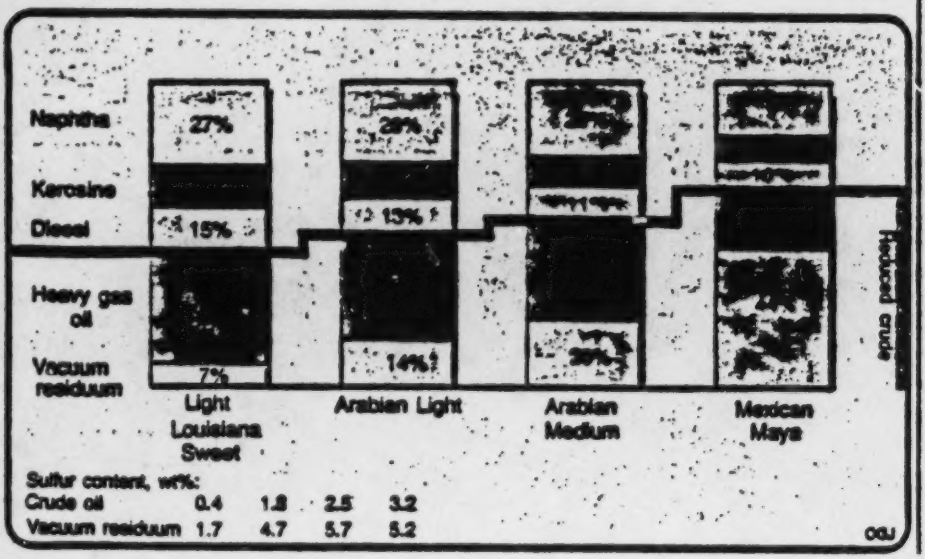
e/Maya crude is a lower quality oil, which has a maximum sulfur content of 3.5 percent, and an API gravity of at least 22 degrees.

Source: DOE.

Reprint from "Status of Strategic petroleum-Research Activities as of September 30, 1982," GAO/RCED-83-29, October 15, 1982.

Fig. 1

Composition of various crudes



Comparable Crude Qualities

	Arab Light	Isthmus	Alaskan North Slope	Maya
Total Crude				
API Gravity	34.4	32.8	26.8	22.
wt% Sulfur	1.69	1.51	1.04	3.32
650-940°F Vacuum Gas Oil				
vol% yield	23.0	20.1	28.3	17.2
wt% sulfur	2.2	2.1	1.2	2.9
wt% Nitrogen	.055	.07	.13	.20
ppm Vanadium	.06	.23	.20	.85
ppm Nickel	.02	.10	<.10	.28
940° Residual				
vol % yield	20.47	20.11	26.06	39.15
ppm Va	45.5	12.56	46.7	742.
ppm Ni	13.6	87.9	23.3	112.

Table 5. Current SPR Crude Oil Specifications

Characteristic	SPR Type I	II	III	IV	V	VI	Appropriate ASTM Test Method
API Gravity (°API)	30 Min.	40-45	30-36	36-40	36-41	26 Min.	D 1298
Total Sulfur (Wt. %), Max.	1.99	0.25	0.50	0.25	0.50	1.25	D 129, D 1552, or D 2622
Pour Point (°F), Max.	50	50	50	50	50	50	D 97
Salt Content (Lbs./1,000 Bbls.), Max.	50	50	50	50	50	50	D 3230
Viscosity (SUS @ 40°F), Max.	150	150	150	150	150	200	D 445 & D 2161
Field Vapor Pressure (Psia @ 100°F), Max.	11	11	11	11	11	11	D 323
Total Acid Number (mg KOH/g), Max.	0.40	0.40	0.40	0.40	0.40	0.40	D 664
Water and Sediment (V - %), Max.	1.0	1.0	1.0	1.0	1.0	1.0	D 96, or D 95 & D 473
Yields (Vol. %)							D 2892 and/or D 1160
Naphtha (>375°F)	24-30	33-42	21-29	29-36	30-38	15-20	
Distillate (375-620°F)	17-31	21-35	23-37	31-45	19-33	24-27	
Gas Oil (620-1050°F)	26-38	20-30	28-42	20-26	23-37	38-42	
Residuum (<1050°F)	10-19	4-9	7-14	0-5	7-14	15-20	

Table 6. SPR Crude Oil Inventory
(December 31, 1981)

Storage Site	Location	Crude Oil Inventory (Million bbl's) 1981 Cumulative Total Sour*	Sweet**	Total	End of Year 1981
Bryan Mound	Brazoria County, TX	7.2	64.4	71.6	38.4
West Hackberry	Cameron Parish, LA	35.0	12.8	47.8	38.0
Bayou Choctaw	Iberville Parish, LA	25.9	16.2	42.1	25.2
Weeks Island	Iberia Parish, LA	57.6	0	57.6	4.3
Sulphur Mines	Calcasieu Parish, LA	9.1	0	9.1	0
Subtotal		134.8	93.4	228.2	105.9
Tanks and Pipelines		1.8	.3	2.1	1.9
Total		136.6	93.7	230.3	107.8

* High Sulphur Content
** Low Sulphur Content

Reproduced from "Strategic Petroleum Reserve, Annual Report, February 16, 1982," U.S. Department of Energy

ATTACHMENT B

EMERGENCY PREPAREDNESS: IMPLICATIONS FOR U.S. AGRICULTURE AND THE RURAL PETROLEUM SYSTEM

FOSSIL FUELS KEY TO AGRICULTURE'S SUCCESS:

Agriculture is the backbone of the U.S. economy. Not only does the agricultural community provide the food and fiber essential to the health and economic prosperity of the United States; but, in a very real sense, it feeds much of the rest of the world as well.

Perhaps no element of our economy fulfills such a crucial, global responsibility. If agriculture in this country were, for some reason, unable to meet that responsibility efficiently, the effects would be felt all too swiftly on a worldwide scale. Less than three million farm families produce enough food and natural fiber to feed and clothe 225 million Americans. These same farm families also export enough agricultural products to pay for more than half of our annual bill for oil imports.

The high level of U.S. agricultural productivity, taken for granted by many, depends heavily on critical petroleum fuel inputs to facilitate the conversion of energy from the sun into food and natural fiber. By adopting technologies

based heavily on fossil fuels, farmers have doubled output levels since 1940, without using more cropland. Labor productivity has increased ten-fold during that time, with one farmer now producing enough to feed himself and 60 others.

Given the vagaries of nature and the perishable characteristics of agricultural products, timing is critical to operations. Farmers and other components of the food and natural fiber system must have fuel in sufficient quantities and at the appropriate time and place to ensure full food and natural fiber production.

DISRUPTION IMPACTS ON AGRICULTURE: AVAILABILITY AND PRICE:

A petroleum disruption can quickly generate serious adverse impacts on U.S. agriculture in two ways--availability and price.

Shortages of fuel are of the most immediate and overriding concern, as even a disruption of short duration at the wrong time can result in crop losses or sharply reduced yields for that entire year. One USDA analysis estimated that a 10-percent fuel shortage at the farm could lead to a 55-percent increase in farm commodity prices.[1/] Fuel shortages similarly affect processing and distribution operations, and can cause spoilage losses and prevent food from ultimately reaching the consumer.

1/ "Constrained Input-Output Simulations of Energy Restrictions in the Food and Fiber System," J.V. Penn and George D. Irwin, USDA, AER Report No. 280, February 1977.

Sharp rises in energy costs resulting from a disruption are also cause for concern. For example, each 10-percent increase in energy costs across the food system can raise food prices 1.2 percent, if fully passed through.2/

In the short-term, however, the farmer as a "price taker" in a truly competitive marketplace must absorb such cost increases (beyond the farm gate, costs can be more readily passed on). Particularly at this time, with the farm economy in the throes of a depression, sharp energy price increases could seriously impair the ability of many family farms to survive.

Unfortunately, disruption-driven price increases generally tend to become a permanent fixture. American agriculture and the economy are still paying a heavy price generated by the 1979 disruption.

To place the economic effects of the last disruption in perspective, it is estimated that the resultant oil price increase means that farmers now spend as much as $5 billion more for their petroleum fuels. Contrast this increased input cost alone with the depression-era farm income levels, which are currently forecast to be from $13-18 billion. As

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2/ For a food system analysis, see "Energy Policies: Price Impacts on the U.S. Food System," USDA/ESCS, 1979.

natural gas moves toward decontrol, this critical fuel and feedstock will also increasingly reflect jumps in oil prices. Agriculture can ill afford any disruption-driven additions to this continuing legacy.

The American consumer ultimately bears disruption-related costs as they impact upon agriculture--be the problem availability or price--in the form of higher food prices. This is no small matter, as food is a basic and essential commodity which accounts for about 17 percent of total consumer expenditures, with the share rising to 40 percent for low income groups.

ROLE OF THE FARMER COOPERATIVE PETROLEUM SYSTEM:

Among the farmer cooperatives the National Council represents are supply cooperatives which own and operate five efficient refineries possessing an aggregate production capacity of 301,000 barrels per day, and whose yields of gasoline, diesel fuel and heating oil amount to approximately 85 to 90 percent of their refined products. While this represents only about two percent of United States refining capacity, cooperatives market petroleum products in more than 40 states and currently supply about 45 percent of all on-farm fuel and a large portion of rural needs.

About three-fourths of the petroleum products sold by farmer cooperatives go to farmers, with the remaining volumes sold to other rural customers. This distribution network for petroleum products is unique and irreplaceable.3/

Farmer cooperative responsibilities have steadily increased, in large part due to partial and total market withdrawals in rural areas by major oil companies. The economic forces causing the withdrawal of these companies from rural markets are understandable. However, the responsibility of serving not only farmers but rural communities which support farming fall more heavily on cooperatives and other independent refiners. In 1979, more than 900 communities were supplied solely by farmer cooperatives, with the total growing each year.

Farmer cooperative petroleum operations represent the only segment of the oil industry in which the consumers of its products are also its owners. This feature carries with it a unique accountability in terms of commitment of supply, service and price.

AGRICULTURAL VULNERABILITY TO PETROLEUM DISRUPTIONS:

The rural petroleum system's ability to meet agricultural needs is heavily dependent upon the ability of farmer-owned and other independent refiners serving rural

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3/ A thorough description of this system is contained in Petroleum Operations of Farmer Cooperatives, 1979, by John M. Bailey. USDA, ACS Staff Report, March 1981.

markets to obtain adequate supplies of crude oil at competitive prices.

The past eight years have provided ample evidence that energy supply life lines to farm and rural communities are particularly sensitive to disruptions. In particular, the Arab Oil Embargo in 1973 and the Iranian shutoff in the Spring of 1979 both placed great stress on fuel supply lines to rural areas, with many farmers experiencing difficulty in getting sufficient fuel for critical operations.

These crude oil disruptions generally impact first and hardest upon farmer cooperative and other independent refiners, whether generated by absolute shortfalls in supply or such high prices that the crude oil is unavailable as a practical matter. For example, as a consequence of the Iranian disruption in early 1979, cooperative refiners lost a significant portion of their crude oil supplies and were forced to run at 50 percent of capacity (compared to an industry average of 85 percent). Further, crude oil acquired by farmer cooperatives was priced well above the national average.

The resulting market impacts were predictable. Other refiners were not positioned to serve the rural distribution system. Even those who could have were committed to their own markets and busily rebuilding their inventories in anticipation of increasing shortages. As a result, rural areas

experienced serious diesel fuel shortages during the spring planting season and winter harvest, and farmers bore a disproportionate share of OPEC-driven price increases.

When fuel shortages first emerged in the Spring of 1979, DOE officials initially responded to requests for assistance with a cavalier "agriculture will just have to muddle through." Only when the problem magnified to a potential agricultural disaster did a belated action emerge in the form of Special Rule No. 9, providing an agricultural priority for diesel fuel allocations. While this measure helped somewhat, there were simply insufficient supplies in the rural distribution network to make up for the losses occasioned by regional crude oil shortages.

Emergency crude oil allocations did ultimately move crude oil supplies to cooperative refineries. Unfortunately, this action did not occur for several months--well after spring planting. Had regional shortages been brought into balance early on at the crude oil end, reimposition of product allocation likely would have been avoided--and the panic-induced price spiral minimized.

Agriculture indeed was fortunate to "muddle through" somehow during past crises. If the SPR is used in a timely and effective manner in response to future shortages, this Nation can avoid a repeat of past mistakes.

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Senator WARNER. Thank you, Mr. Van Arsdall.

The bottom line is mother nature dictates when crops must go in, and crops must be harvested and otherwise cared for by spraying and so forth in the interim. And as such, the farmer has got to have a measure of confidence in the availability of fuel. Otherwise, we cannot expect the farmer to deliver America's food.

Is that not about it?

Mr. VAN ARSDALL. That is certainly our immediate concern. We are concerned about energy prices doubling because of a disruption, and staying with our farmers for a long time beyond that.

Senator WARNER. Farmers have been very hard pressed by the increase in energy prices. So much of their work is done under a fixed-cost situation over which they individually and to some extent collectively have almost no control whatsoever.

Mr. VAN ARSDALL. As you know in selling your own commodities, you cannot adjust the price for your livestock based on what your costs were. And if your energy price doubles, you have to eat it in your net income.

Senator WARNER. And we are dwindling in numbers each year of the persons who are willing to labor dawn to dusk in the fields.

Mr. VAN ARSDALL. That is right, Mr. Chairman.

Senator WARNER. Just to close out with a little ad for the farmers. The American people have the lowest cost food of any major industrial nation in the world.

Mr. VAN ARSDALL. We certainly endorse that.

Senator WARNER. Thank you.

Mr. VAN ARSDALL. Thank you.

Senator WARNER. We appreciate your courtesy.

Mr. Thomas Stern, the director of government relations of the Americans for Energy Independence.

Mr. Stern, we will put your statement in the record. And it would be the hope of the Chair that you could summarize those points. And I apologize for the delay.

Mr. STERN. I will certainly do that, Mr. Chairman.

STATEMENT OF THOMAS STERN, DIRECTOR OF GOVERNMENT RELATIONS, AMERICANS FOR ENERGY INDEPENDENCE

Mr. STERN. Mr. Chairman, the Americans for Energy Independence is a national public interest organization. We are not experts in the technicalities of the Strategic Petroleum Reserve, but appear before you today in hopes of setting a policy framework within which decisions can be made.

We view the energy field as a matter of national security as well as economic well-being. It is therefore not surprising that we place the emphasis on the word strategic in the phrase Strategic Petroleum Reserve.

The ability of this Nation to withstand, without serious damage, another oil supply cutoff is critical. It is as critical today as it was when the SPR was first conceived. Unfortunately, we have been lulled into a false sense of security by the well-known oil glut.

My written testimony covers the various contingencies that would make the glut disappear overnight. I will not take the time now to examine the world situation, because the perils are well known to all readers of daily newspapers.

It is, of course, true that our oil dependency has greatly lessened in the last few years. In 1978, we consumed an average of 18.8 million barrels of petroleum products per day. In 1982, that figure was reduced to less than 15.3 million barrels a day.

Our imports in 1977 average over 8.5 million barrels per day, while in 1982 that figure had dropped to 4.2. And the level has been further reduced during the first few months of 1983.

Most significantly of all, Mr. Chairman, is that our imports from OPEC have decreased 66 percent from 1977 to 1982 with an even larger drop evidenced by imports from the Middle East.

There are, of course, two factors which suggest that our position may not be quite as rosy as today's statistics may indicate. In the first place, we do not know what the impact on oil imports will be when the economy really picks up speed.

Second, we must remember our allies whose dependence on Middle East oil continues, although on a reduced basis. In 1982, Germany imported 54 percent of its oil imports from the Middle East; Japan, 72 percent; France, 57 percent; and Italy, 66 percent.

Together these 5 countries consumed 3.3 million barrels of Middle East oil per day. A loss of 3 to 4 million barrels per day to the Western Alliance will be sufficient to trigger the emergency provisions of the International Energy Agreement requiring all signatories to reduce their oil consumption by 7 percent.

If this should happen while our economy is still recovering, the results would be very serious indeed. Our peril and that of our allies is well-recognized by the administration, which is prepared to spend $40 to $80 billion for a rapid deployment force.

As we understand it, the rapid deployment force is being developed to protect the Middle East oil supplies and the lines of communication. The Strategic Petroleum Reserve is designed to reduce our vulnerability to an oil cutoff.

It seems to us that both the SPR and the RDF are designed to meet the same contingency. If that be the case, then we fail to understand why both should not receive full financial support. Our objective in this decade must be to shield us and our allies from the dangerous consequences of a temporary or even permanent withdrawal of Persian Gulf supplies.

This objective is within reach if we show some will. Our success in achieving this goal or our failure to do so will be a major determinant of the political and economic fortunes of the Western Alliance during this decade and beyond. The Strategic Petroleum Reserve plays a keystone role in this objective.

We, of course, recognize the current fiscal restraints that must limit Government in these programs. We would hope that the Strategic Petroleum Reserve would be examined as a national security effort, and that resources be allocated just as they are to other national defense needs.

We cannot rest until we have safely stored at least 750 million barrels. The sooner that we do so, the better. The SPR could serve other purposes as well. It could serve to stabilize the oil market by introducing U.S. purchases at appropriate times.

Furthermore, it could be used to assist certain oil producers whose economic well-being is vital to us, and who depend almost entirely on the oil production.

These objectives although obviously important are secondary to the national security purpose that the SPR can play. If the U.S. Government finds the proper management of the SPR an excessive burden, then there are other alternatives that might be examined.

Among those mentioned by experts, we find the possibility of a semigovernmental corporation or the levying of a private storage requirement particularly attractive.

We hope, Mr. Chairman, that this committee will be mindful of other management devices that will provide greater protection to our country of an oil cutoff than we have at this moment.

It is true that all suggestions require financia resources, although not necessarily public funds. The argument that no increased resources above those requested by the administration are necessary cannot be supported by an analysis of the world situation.

We congratulate you, Mr. Chairman, and the members of this subcommittee for the determination shown to keep the issue of the Strategic Petroleum Reserve in front of the American public. We sincerely hope that that public will give the committee the support that it deserves.

Thank you, very much.

[The prepared statement of Mr. Stern follows:]

Statement of

Mr. Thomas Stern
Director of Government Relations

AMERICANS FOR ENERGY INDEPENDENCE

before the

SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES
Senate Energy and Natural Resources Committee
United States Senate
Washington, D.C.

May 6, 1983

Mr. Chairman and members of the Committee:

On behalf of Americans For Energy Independence (AFEI), a national public interest organization, I appreciate your invitation to appear before you on an issue we consider of vital importance to our nation. As you know from our previous presentations, we consider the status and future of the Strategic Petroleum Reserve to be a matter closely linked to our national security and economic well-being. We believe that the word "Strategic" was chosen carefully to reflect the significance of the Petroleum Reserve.

The concept of the SPR was developed at a time when this country was clearly in the throes of an energy crisis. The shortages and larger price increases triggered by the Arab oil embargo hit every single American. The perils of oil supply cut-off were made painfully clear to the American public, which therefore gave full support to such matters as the development of the Strategic Petroleum Reserve.

Today, that concern has diminished and the perils are being obscured by the so called "Oil Glut," which has pushed the energy issue off the front pages of our newspapers. Declining oil prices have created an atmosphere of euphoria and lowered the level of concern not only for the problems of today, both real and potential, but even more dangerously, for our long-run energy future. We need not point out to this committee the serious risks we are running as one energy fuel after another appears on the "endangered species" list. If we also permit the SPR to decline from a flow to a drip, we face indeed a dry spell in the future.

It is of course true that our oil situation has changed dramatically over the last four years. To deny that fact would be to close our eyes to reality. In 1978 we consumed an average of 18.8 million barrels a day of petroleum products. In 1982 that figure had been reduced to less than 15.3 million barrels. .Our imports in 1977 averaged over 8.5 million barrels per day. In 1982 that figure had dropped to 4.2 million barrels and the level has been reduced even further in the first few months of 1983. Most significantly of all, our imports from OPEC decreased by 66 percent from 1977 to 1982 with an even larger drop evidenced by imports from the Middle East.

We are not in a position to predict the impact on oil imports of potential future developments. For example, there is a raging argument today among experts on the potential oil import increases that the expanding economy will require. Also undetermined is the long-run effect of lower oil prices on domestic exploration and development and on progress to develop alternative fuels. We do know that there has been a sharp decrease in drilling; we do know that the synfuel industry seems to have died aborning. The prudent policy maker will assume that these factors will be permanent and therefore will foresee an increased requirement for imported oil and assume an increased dependency on unstable sources.

Furthermore, while we are now in a far better situation than four years ago, our allies continue to depend heavily on oil from unstable areas. Germany in 1982 relied on the Middle East for 54 percent, Japan for 72 percent, France for 57 percent, and Italy for 66 percent of its oil consumption. In terms of total energy requirements, Middle East oil represents 28 percent of German energy consumption, 54 percent of Japanese, 45 percent of Italian and 35 percent of French. Together, the five countries consumed approximately 3.3 million barrels per day of Middle East oil, (based on latest available data). This is still a very significant factor in the energy picture of our closest allies.

We must remember that a loss of four million barrels per day to the members of the International Energy Agency would provide grounds for invoking the emergency provisions of the IEA agreement to which the United States is a signatory. The IEA agreement may be triggered when the previous year's import level of any signatory is reduced by seven percent.

When the IEA agreement is invoked, all members must reduce consumption by seven percent. This is known as the "seven percent solution." If such invokement were to occur during the next few months, our consumption would have to be reduced below a level already ravished by recession. The potential consequences not only for the patience of the American public, but for social unrest as well, must always be part of the calculations of the policymaker. Under any circumstances, but particularly for the next few years as our economy rises from recent depths, the spectre of an IEA emergency procedure should be enough to spur us on in filling the SPR as rapidly as possible.

The major threat to U.S. interests in the very near term does not stem from a temporary production cutback coupled with a surge in demand. The key factor continues to be the political environment prevailing in the Persian Gulf. Sudden changes in this unpredictable and volatile region of the world could create interruptions in the oil supply that for the foreseeable future would have serious consequences on the Western alliance. The present Administration continues to recognize this fact by devoting billions of dollars to the establishment and enlargement of the Rapid Deployment Force. We must therefore address the potential contingency of an oil supply cut-off. Our objective in this decade must be to shield us and our allies from the dangerous consequences of a temporary or even permanent withdrawal of Persian Gulf supplies. This objective is within reach if we show some will. Our success in achieving this goal, or our failure to do so, will be a major determinant of the political and economic fortunes of the Western Alliance during this decade and beyond. The Strategic Petroleum Reserve plays a keystone role in this objective.

By contemplating a sequence of events that might follow in the wake of a sudden interruption of Gulf supplies, we can appreciate the fragile condition of Western energy security and the critical need to do all we can now to protect ourselves with an effective energy emergency structure. The most significant oil interruption would result from a regime change in Saudi Arabia, an ever-present prospect, which would most likely result in the conservationist position on Saudi oil production that the growing cadre of professional Saudi planners and economists have been unsuccessfully recommending for years. Oil production levels would be permanently reduced to about 2 million barrels a day of the world market. The Middle East supply line is also subject to potential interruption if Iranian appetites for expansion continue or if the USSR takes further action to broaden its historical interest in Persian Gulf domination.

One of the most effective protections available to us to shield us from the vagaries of the oil market is an adequate Strategic Petroleum Reserve. This oil stockpile was started in 1977 to provide a reserve in case of a cut-off. The current target is 750 million barrels of crude oil by 1987, although at today's fill-rate, we will not reach our goal until at least the beginning of the next decade.

The first three years (1977-80) of the SPR were marked by more talk than action. We could have filled many a dome with the promises made. By the end of 1980, the SPR contained only 107 million barrels or at that time, 21 days' worth of imports. The Carter Administration was severly criticized by candidate Reagan who upon assuming the Presidency moved rapidly to increase the fill-rate. The average daily rate in 1981 was 250,000 with a congressional mandate to reach 300,000 if at all possible in 1982. According to the Administration, fiscal considerations mandated a lower fill-rate than anticipated in fiscal years 1982, 1983, and 1984 and we assume even beyond that. In a recent letter to us, Secretary Donald Hodel stated: "While we have not accelerated the phase III increment of the program, we have not foreclosed the possibility of reaching 750 million barrels by 1990, our FY 1983 goal.... Recognizing current fiscal conditions, and taking into account our improved energy situation, our plans and policies for the SPR development have changed remarkably little, and we remain committed to a 750 million barrel program."

It is this overwhelming concern for the "Fiscal Conditions" that separates us from the Administration. As a member of your committee recently noted, there must be a relationship between expenditures contemplated for the Strategic Petroleum Reserve and the Rapid Deployment Force. Both are intended to reduce our exposure to a potential cut-off of oil supplies. Would it not be considerably cheaper, if we are concerned with budgetary limitations, to stock up our oil reserves sufficiently to protect ourselves and our allies rather than to attempt through the development of a large military force and the acquisition of a large network of foreign bases to protect a supply source and a line of communications that many consider indefensible?

It is not our intention to quarrel with this Administration on its views of strategic requirements. We merely wish to remind all that the SPR and our national security requirements are closely intertwined and can not be viewed as distinct issues. In our letter to Secretary Hodel dated February 7, 1983, we stated: "In our view, the Strategic Petroleum Reserve is critically important both as an instrument of United States national security strategy and an economic insurance policy. Until the budgetary retreat on SPR was proposed, we were under the impression that this was the Administration's view, as well. The commitment to a strong SPR has been the one major area in energy policy where the Administration has been willing to depart from its adherence to the free market philosophy; indeed, administration spokesmen for the past two years have consistently cited the SPR as a cushion which justifies entrusting the nation's energy security to marketplace decisions."

"The Department of Energy's statement that the present reserve of 300 million barrels would offset a 50 percent reduction of current net imports for about 5 months, is based on a best-case scenario, and one which in fact involves something close to a worst-case with respect to the status of the U.S. recovery. Under a variety of circumstances, our present reserve could disappear much more quickly, depending on the nature of the cut-off, the impact it might have on some of our European allies, as well as on increased energy demands of the hoped-for economic recovery. Existing international energy agency agreements commit the United States to assist our allies in the event of an emergency, and thereby increase the risk of depleting our own stocks."

"While the strategic importance of the Persian Gulf is a subject of debate, the cost of the planned U.S. Rapid Deployment Force which might or might not prove capable of protecting Western oil interests in the Persian Gulf is a matter of fact: $40-80 billion. If there is a relationship between strategic importance of the Gulf and the size of the Strategic Reserve, the cost-effectiveness of the SPR should be evaluated in this context."

"Finally, the SPR can help stabilize the oil market. For example, a continuing major SPR import relationship with Mexico could be decisive in forestalling major economic collapse in an environment of declining oil prices."

"We would like to make some suggestions on avenues for a more rapidly expanding SPR that might be further explored. We believe that, at a minimum, the fill-rate should be 300,000 barrels per day, which will permit us to complete the program of 750 million barrels in about four years. Though we would like to see an accelerated storage program above and beyond 300,000 barrels per day, we recognize that this target may be unrealistic, even though its achievement would benefit both our national security and economic well-being.

Among the avenues for an accelerated SPR program that should be explored are:

- The establishment of a semi-governmental corporation empowered to sell bonds or other marketable paper, backed both by the physical assets (i.e. stored oil) and the United States Government.

• A requirement for private storage, such as practiced by certain European countries, coupled with some financial incentives for participating companies.

• The imposition of an import tax with a portion of the revenues devoted to SPR purchases."

It is of course true that all our suggestions require financial resources, although they may not be public ones. The argument that no increased resources above those being requested by the Administration are necessary can not be supported by an analysis of the world situation. The Administration is correct in its analysis when it supports a Rapid Deployment Force; it is not when it reduces its budgetary requests for the Strategic Petroleum Reserve. That, Mr. Chairman, is the essence of our position on the SPR. We congratulate you and the committee in its determination to keep the issue in front of the American public. We devoutly hope that that public will give the committee the support it deserves. Thank you.

Senator WARNER. Thank you, very much, for joining us today. It is comforting to know that you and your organization are there trying to assist all that in the management position in this agency question. I share the views that you have expressed today.

Mr. STERN. Thank you, Mr. Chairman.

Senator WARNER. Thank you.

Mr. Peter Luciano, executive director, Transportation Institute.

Mr. LUCIANO. Thank you, very much, Mr. Chairman.

Senator WARNER. And I apologize for the inconvenience that you have experienced.

Mr. LUCIANO. Not at all, sir.

STATEMENT OF PETER J. LUCIANO, EXECUTIVE DIRECTOR, TRANSPORTATION INSTITUTE

Mr. LUCIANO. It is a pleasure to be back here again before your committee. On behalf of the member companies of the Transportation Institute, we very deeply appreciate this opportunity to express our views on the Strategic Petroleum Reserve.

Mr. Chairman, I would like to accept your invitation to submit my statement for the record, and I hope to summarize in the interest of time.

Senator WARNER. Yes.

Mr. LUCIANO. Most importantly, Mr. Chairman, we very strongly support your efforts and the efforts of this committee to build a credible Strategic Petroleum Reserve. And in our view, this is the best possible time to maximize the full rate into that reserve.

Prices are down, and there are ample supplies, and so forth, and other market conditions of which you are very much aware. At the same time, most forecasts that we are aware of whether they are by private concerns, or public, or international bodies are virtually all forecasts that predict a much tighter market by the mid-1980's and beyond.

So to reduce the fill rate as the Department of Energy has done at this time is in our view very short-sighted. And it not only loses a significant opportunity, but it damages the strategic interests of the United States in the very important purposes for which that reserve was originally set up.

You recall, I know, that when Mr. Schlesinger was Secretary of Energy, he stopped buying oil for the Strategic Petroleum Reserve for a period of time, because it was alleged that oil was too expensive. And it was certainly a good bit cheaper then than it is today, even with the reduced prices that we have seen in the recent months.

At the same time, this proposal by the Department of Energy to monitor the world situation and so forth seems to me to be dangerously naive. It is the worst time to buy oil when a crisis is looming, when the supply has been cut off, and a war has disrupted the Middle East, or when an embargo is already in place, and so forth.

The oil becomes rapidly more expensive. Supplies may not even be available at any price depending on the type of scenario that may occur. And purchases for the SPR at that point only serve to worsen whatever crisis it is that has precipitated the problem.

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In addition, Federal agencies do not have the best record for forecasting crises. And I suggest that the approach that this committee has taken is a much more realistic one than waiting until the emergency is upon us.

Furthermore, DOE, as you know, has submitted a proposal to the Congress that would waive the U.S. flag shipping requirements for its draw-down plan. It seems to me that the Department of Energy, if they are interested in considering the full range of scenarios and contingencies that they might have to deal with the SPR, should be encouraging the growth of the U.S.-flag merchant fleet instead of disbanding it.

That fleet will be essential for many important scenarios for a draw-down of the SPR. And they should be encouraging the growth of that fleet rather than encouraging a reliance on foreign flag ships which an international oil crisis would merely add one more major uncertainty to an already ominous situation.

I think that what we see here is a case of chronic myopia. Certain components of the Department cannot seem to see very far forward, and they cannot see very far backward. They do not recall the mistakes that they made in the past, and they do not seem to have any clear view of the SPR as a system rather than just a tank of oil in the ground, and that it is merely their job to fill that tank.

They do not understand what has to be done with that tank, and how it has to tie into the economy, how it has to tie into various kinds of scenarios and so forth. They do not seem to be prepared to look far enough into the future to a time of tight oil supplies, of higher prices, and perhaps a major embargo or military disruption.

They cannot seem to see far enough into the future to see the point at which they will need a dependable supply of the American flag shipping to distribute that oil. And they cannot seem to see far enough into the future to plan for a whole range of contingencies that they may have to face, whether it is war, sabotage, or any number of other things.

I was listening to Mr. Vaughan this morning, and I heard him refer, and I think that I am quoting quite closely to his exact words.

> To the ability of the reserve to fulfill its mission. It is as though this reserve is some sort of disembodied agent unto its own that does not require the planning that participation of real live human beings who are planning for real live events that might occur.

I am afraid that that is unfortunately characteristic of the approach of the Department to the SPR. I think that it is seen unfortunately as an entity that can fulfill its mission unaided without the sort of advice and counsel that you, Mr. Chairman, and this committee have been trying to provide for some years, I am afraid, as you know, with less than complete success.

Fortunately, this committee and the Congress as a whole has in our view had a much better vision, and has consistently shown the ability to see the strategic implications of the Strategic Petroleum Reserve, and the impact that those contingencies might have on it. We honestly hope that you will move forward to maximize the fill rate of the reserve, and insure that the ultimate size of the reserve is large enough to provide the kind of psychological deterrent to foreign powers that is so important an element of this major Federal program.

Thank you, sir.

[The prepared statement of Mr. Luciano follows:]

STATEMENT OF PETER J. LUCIANO

EXECUTIVE DIRECTOR

TRANSPORTATION INSTITUTE

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

UNITED STATES SENATE

May 6, 1983

Mr. Chairman and members of the Subcommittee, my name is Peter J. Luciano. I am Executive Director of the Transportation Institute. The Transportation Institute is a nonprofit research and educational organization which directs its efforts towards preserving and promoting America's merchant marine. We represent 174 member shipping companies which operate in the Nation's foreign and domestic trades. On behalf of the Transportation Institute, I would like to take this opportunity to express our position on the fiscal year 1984 recommended funding levels for the Strategic Petroleum Reserve.

The Transportation Institute has always strongly supported the rapid filling of the Strategic Petroleum Reserve. We believe that the Strategic Petroleum Reserve is of critical importance to national security and to the economic well-being of the country. The Reserve is the most effective weapon the

United States has to protect the security of U.S. energy supply, to ensure that we can preserve the integrity of U.S. foreign policy in the face of political pressures during a supply disruption, and to counteract the severe economic consequences of a loss of energy supply.

The energy crises of the past decade have left a large mark on the world economy. Since 1973, inflation rates in the industrial world rose on average from an annual rate of about 4 percent in 1973 to 10 percent in 1981, unemployment rose from 3 percent in 1973 to about 9 percent in 1982, and GNP growth slowed from about 5 percent per year during the 1960-73 period to 2.3 percent between 1973 and 1981. The Congressional Budget Office, in 1981 projected that a year-long national shortfall of 2 million barrels per day in 1984 (the United States now imports about 3.4 million barrels of crude oil a day) could reduce GNP by about $146 billion dollars, increase unemployment by about 1.1 percent and increase inflation by about 7 percent. Clearly, a supply interruption could have a most serious economic impact on the United States. A reserve of 750 million barrels will ensure that the hardships wrought by the supply interruptions of the last decade are not repeated.

We highly commend the Senate Energy Committee for rejecting the fiscal year 1984 budget request of the Department of Energy

and recommending to the Budget Committee that $2.484 billion be made available for fiscal year 1984 in order to maintain a fill rate of at least 220,000 barrels per day. The budget request of the Department of Energy would have reduced by one half the minimum fill-rate specified by Congress in its fiscal year 1983 appropriations. This would clearly have been contrary to the provisions of the Energy Emergency Preparedness Act of 1982, which specifies a minimum fill-rate of 300,000 barrels per day unless the President finds that compliance with this rate is not in the national interest, in which case the fill-rate must be at least 220,000 barrels a day. We are extremely pleased that the Committee has turned back the budget proposal of the Department of Energy.

We believe that any reduction of the fill rate below the 220,000 barrel per day minimum required by law would reduce this country's ability to respond effectively to an oil supply emergency. The current thinking on the part of the Administration, which originally led them to recommend a lower fill-rate, was that 1) a high fill-rate is no longer essential because of "the dramatically improved world oil markets"; 2) that the United States and its allies are "much better prepared today to deal effectively wit disruptions in oil supplies"; and 3) that the United States is far less dependent on the Middle East for its oil supplies. We disagree strongly with -

this interpretation of America's present energy situation.

The current relative abundance of world oil supply is not a permanent phenomenon. It is a temporary phenomenon brought on in large part by the deep worldwide recession which was, in fact, induced in part by the 1978 oil price shock which raised crude oil prices by about 170 percent. Most prominent energy specialists agree that oil markets are likely to tighten again by the middle of the decade. In its World Energy Outlook, the International Energy Agency (IEA), predicts that by the mid-1980s, the oil market will again move towards disequilibrium as world economic activity recovers and current worldwide oil production levels stagnate. The IEA predicts a shortfall in worldwide oil supply of 4 million barrels a day by 1990. To quote from the IEA study:

> From the mid-1980s onwards, however, the oil market is likely to gradually move towards a basic disequilibrium again as growing world oil demand will be confronted with stagnating production. In particular, oil output in North America, the North Sea and the Soviet Union is projected to level off or decline, and OPEC production could well be constrained by declining reserves in some countries and by political decisions in others. At the same time, oil import requirements are expected to rise significantly in the Third World as a result of economic development, increasing

urbanization and industrialization. OECD demand for oil imports, on the other hand, would at best decline slightly from present levels if non-oil energy use grows substantially, but may well increase steeply in the absence of additional price or policy incentives to restrain oil consumption and to increase domestic production.

The IEA's forecast is reinforced by a recent study entitled Global Insecurity by Daniel Yergin of Harvard University and Martin Hillenbrand, Director of the Atlantic Institute for International Affairs in Paris. In it, the authors argue that another oil crisis is possible and even likely before the end of the 1980s. They predict that another oil crisis could find the United States with oil production as much as 40 percent below the present level. Furthermore, the authors predict that by the year 2000, the industrial world could be faced with only two-thirds of its current oil supply. Such dire predictions are not at all uncommon. We are, therefore, very skeptical of any suggestion that underlying world energy trends have changed to any substantial degree.

The belief that the United States is better prepared today to deal with disruptions in oil supplies is also overly optimistic and misleading. Undoubtedly the United States has made great progress in reducing its oil dependency, in

stabilizing its oil production, and in beginning to undertake the structural changes necessary to reduce energy consumption. However, a closer look at America's oil supply picture reveals the following facts:

1) Structural adjustments to changed energy prices, while clearly underway, are beginning to slacken because of the current recession. Industry's ability to invest in energy efficient equipment is being halted by the severe economic constraints imposed by the current recession.

2) Falling oil prices brought about by easy oil market conditions, are beginning to cause complacency on the part of energy consumers and producers. Exploration and drilling activity is threatened by the eroding price of oil. Hughes Tool recently reported that more than 700 drilling rigs have been idled since the beginning of the year and the rig count is expected to decline to about 1700 by the end of May down from 2043 reported on March 7th.

3) Governmental energy programs designed to increase production and decrease consumption are being reduced and even dismantled by deep budget reductions.

4) Since 1973, United States oil reserves on average declined at an annual rate of about 1.3 billion barrels. There is general agreement in the oil industry that even with continued high drilling activity, oil production in the United States will continue to fall by 2.5 to 5.5 percent per year throughout the rest of the decade. Recent forecasts by the Department of Energy see a decline in oil production in the lower 48 states of 24 percent by the end of the decade. Production in Alaska's Prudhoe Bay oil fields is also projected to begin to decline after 1988, at an annual rate of 11 percent, which means that Prudhoe Bay will be pumping only 400,000 barrels a day by 1995 (current production is 1.6 million barrels a day.) Standard Oil Company of California projects a fall in domestic production of crude oil of 25 percent by the end of the century, while the IEA forecasts an even larger decline to about 43 percent of current levels.

5) The Middle East is still rife with political upheaval. There is also nothing which guarantees political stability in other non-OPEC supplier countries. Mexico, one of our largest current suppliers, for example, is at this time in a precarious economic as well as political position. We should, therefore, hold no illusions about the long term security of any of our foreign oil suppliers.

The Transportation Institute also takes issue with the contention that the United States is far less dependent on Middle East oil and, therefore, on insecure foreign supplies. First of all, total Arab OPEC suppliers still account for about 20 percent of total petroleum imports. Second, the Middle East still holds more than half the world's oil reserves and nearly 77 percent of the world's excess production capacity - (10 million barrels a day of the 13 million barrels worldwide.)

This is important because of the fact that in the event that the demand for oil once again picks up, (which it is likely to do before the end of the decade), most of the increase in demand will have to come from Arab OPEC suppliers who are the only producers with sufficient excess capacity to produce more oil. The majority of non-OPEC producers, including the United Kingdom and Mexico, are unable or unwilling to increase production.

A study by Cambridge Energy Research Associates underscores the importance of the OPEC producers. Since 1979, OPEC oil production fell by 40 percent while world energy consumption has declined just one percent. The study calls the "OPEC multiplier" the driving force in a process by which a small change in energy consumption precipitates a large change in OPEC

production. The multiplier effect can work in both directions and could lead to an explosion in the demand for OPEC oil once demand recovers from its currently depressed levels.

The importance of this for the United States is that, should demand recover when economic conditions improve, most of the increase will come from the Arab OPEC countries. Therefore, when oil markets once again tighten, United States dependence on OPEC sources will again increase, and probably substantially.

These facts taken together cast serious doubt on the future of United States energy preparedness. It is, therefore, imperative that the government continue to fill the Reserve as rapidly as possible in order to reach its goal of 750 million barrels by 1989.

We also take issue with the suggestion by the Department of Energy that although it intends to reduce the current fill rate substantially now, it will continue to monitor the world oil situation so that in the event of probable supply disruptions and price increases it can again begin to fill rapidly the available Reserve capacity. First, we question the assumption that supply disruptions can be predicted or foreseen (the events in Iran were not foreseen). Second, the time to rapidly fill the Reserve is not when oil markets are beginning to

tighten and prices to rise, but when markets are slack and prices are falling as is now the case. If the United States were to wait until markets began to tighten to fill the Reserve, it would contribute to a further tightening of markets and a further upward spiral of oil prices.

The United States is now in the fortunate position of being able to purchase oil rapidly at decreasing prices. Never has the United States been better positioned to purchase oil for the Reserve. The Department of Energy seemed willing to sacrifice this great opportunity for the sake of what it believed were significant budget savings. In fact, purchasing more oil now will save the government money. Oil prices have fallen on average by as much as $4 per barrel. A simple calculation shows the potential magnitude of cost savings lost if the government were to refrain from purchasing oil while prices are low. If the government were to lower purchases from 220,000 barrels per day to 145,000 per day, it would lose $1 billion per year in cost savings foregone from a decrease in oil prices of $4 per barrel.

We are also concerned that outlays for storage facility development be maintained. If Phase III facilities development is not continued at an acceptable rate, it will constrain future expansion of the Reserve and jeopardize the government's efforts to reach the 750 million barrel goal for 1989.

With regard to the fiscal year 1983 fill-rate, we support the Senate Energy Committee's efforts to ensure that the Energy Department increase the current fill rate to the highest practicable rate achievable by utilizing all available appropriations. We are pleased that the Department of Energy is now proposing to fill the Strategic Petroleum Reserve at a rate of approximately 255,000 barrels per day for the duration of fiscal year 1983. It would be foolish not to fill at the highest rate possible given the continuing decline in oil prices.

The Transportation Institute would also like to comment on several maritime issues which involve the Reserve. As you know, the Cargo Preference Act applies to the transportation of foreign oil acquired for the Strategic Petroleum Reserve. For several years, the Department of Energy failed to comply with the requirements of the Act. However, since the Energy Department and the Transportation Department signed an agreement last year regarding the application of the Cargo Preference Act to the Strategic Petroleum Reserve program, significant improvement has been made towards full compliance with the Act. In fact, the Department of Energy has been able to use U.S.-flag tankers to carry practically all the foreign oil delivered to the reserve this year.

As part of the agreement, the two departments agreed to seek the Attorney General's opinion with respect to the question of whether the transportation of Alaska oil to the Reserve--which must be on U.S.-flag vessels anyway pursuant to the Jones Act--may also be counted towards cargo preference compliance. The Attorney General is currently considering the question.

The Transportation Institute is confident that the Attorney General will agree with the Department of Transportation's ruling that such transportation may not be counted since it would frustrate Congress' intent in enacting the Cargo Preference Act to ensure that U.S.-flag vessels in the foreign trades carry at least 50 percent of government generated cargo. As Senator Gorton--former Chairman of the Senate Commerce Committee's Merchant Marine Subcommittee-explained last year to Assistant Secretary Vaughn during an oversight hearing on the administration of the Cargo Preference Act, and I quote:

> [I] am sure that I speak for my colleague here [referring to Senator Inouye, ranking minority member of the Subcommittee] and myself in saying that to include Alaskan oil, which is subject to the Jones Act, in [cargo preference compliance] figures seems to us not only to be misleading, but, I think, a direct violation of law.

We also note that in its December 31, 1982 Report to Congress on Comprehensive Energy Emergency Response Procedures, the Energy Department has proposed waiving U.S.-flag shipping requirements to facilitate drawdown and distribution during a supply interruption.

The Energy Department's proposal would amount to waiving the Jones Act. The Jones Act, which refers to Section 27 of the Merchant Marine Act of 1920, is one of the most important shipping statutes of this nation. It restricts the transportation of merchandise between any two points in the United States to U.S.-built and U.S.-documented vessels. Without it, the United States would run the risk of having its coastwise trade controlled by foreign shipping. Many countries of the world have such cabotage laws to protect their coastwise shipping. The law was enacted not only to encourage coastwise and inland shipping, but to ensure the maintenance of a strong merchant fleet capable of assisting United States military forces in times of war or national emergency. We, as a nation, benefit enormously from a strong merchant fleet, and the Jones Act provides a major base for that fleet. Furthermore, the U.S.-flag requirement for carriage of Strategic Petroleum Reserve oil is necessary if the United States is to have control over drawdown and distribution of Reserve oil during times of supply disruptions. We, are, therefore strongly opposed to any proposal which would waive the Jones Act.

The Transportation Institute believes, for the reasons discussed above, that the United States continues to remain vulnerable to energy supply interruptions. The adverse effects of a disruption on the economy and on the strategic security of the nation make it of the utmost importance that the government continue to fill the Reserve as rapidly as possible. Congress has repeatedly shown its desire to fill the Reserve as quickly as possible and willingly appropriated enough funds for fiscal year 1983 to make a fill rate of 300,000 barrels per day possible.

The Transportation Institute respectfully urges the Subcommittee to consider carefully the concerns we have expressed, and to ensure that adequate funding is appropriated for fiscal year 1984 so that a rapid fill rate is maintained.

Thank you.

Senator WARNER. Thank you, very much. I appreciate your valuable contributions to this issue.

Our last witness today will be accompanied by the distinguished former Governor of Virginia, John Dalton. We will now hear from Mr. Montgomery, president of the Saltville Underground Storage Co.

Governor Dalton, we welcome you before this committee. You have been here before in a variety of capacities.

Governor DALTON. Thank you, Mr. Chairman.

Senator WARNER. And if you would be kind enough to identify those who are accompanying you.

STATEMENT OF JOHN DALTON, FORMER GOVERNOR OF THE STATE OF VIRGINIA, ON BEHALF OF SALTVILLE UNDERGROUND STORAGE CO.

Governor DALTON. I am very appreciative of the opportunity for the Saltville Underground Storage Co. to be here today to lend some testimony to this hearing. As you know, I am John Dalton. I am an attorney with the firm of McGuire, Woods & Battle in Richmond, Va., and we represent Susco.

Saltville Underground Storage Co. is the owner of the Worthy Mine at Saltville, Va. I might say for the purpose of the record that this is a mine that is located at Saltville, but it is not a salt mine. It is a hard rock mine located some 5 or 6 miles from the salt area at Saltville, Va.

The Worthy Mine holds some 21.5 million barrels of oil, if we put oil in it. So it would be a significant contribution to the strategic petroleum reserve program. I might point out to you, Mr. Chairman, that it is just a short distance by rail to the east coast from the Worthy Mine, where it is quite a ways from Louisiana and Texas all the way around shipping lanes below Florida up to the refineries on the east coast.

As a matter of fact, Havana, Cuba is closer to those shipping lanes than Dulles Airport is to this Capitol, to give you some idea of the vulnerability of the ships that would be sailing the waters to bring oil to the east coast refineries. The east coast refineries have a capacity of some 1,700,000 barrels of refining capacity daily, and they would be subjected to those hazards if we relied on what the Department of Energy is talking about.

Senator WARNER. Governor Dalton, it is interesting in history. In World War II, there were about a dozen German U-boats that tied up that very channel that you are speaking about for around 2 years. And the home base of those U-boats was about 3,000 miles away. We have that very strategic vulnerable area.

Governor DALTON. We have filed with the papers that we filed with your committee a newspaper article showing that very recently Soviet submarines were sighted within 50 miles of the coast of Louisiana. And we on the east coast simply should not be subjected to that type of vulnerability.

I could not help but be impressed by the questions asked by the distinguished Senator from Hawaii concerning the long haul from the gulf coast to Hawaii. When we heard the Assistant Secretary of Energy saying that they are filling the new capacity as it becomes

available, I could not help but think that we have 21.5 million barrels of capacity already dug out sitting in Virginia that is available, and they do not seem to be too interested in it.

He also said that the two major factors were the cost factor and the need factor. And certainly, the distinguished Senator from New Jersey as well as the distinguished Senator from Hawaii were talking about the need factor of their areas.

We on the east coast certainly have a distinct need factor. And if the cost factor of storing the oil in the Worthy Mine is less than the cost factor of storing the oil in salt domes in Texas and Louisiana, certainly the Federal Government should take a good hard look at this

I have with me today several people. My testimony, Mr. Chairman, is somewhat different than what it was last year. Mr. Montgomery is back with me, and he is the president of the Saltville Underground Storage Co., and he will testify.

But I also have several other people who have been added to the Saltville Underground Storage Co. team. I have three people from the Saltville area, who would like just to stand up and be recognized. Mr. Laurence Richardson, Mr. Leo Branham, and Mr. V. D. Kendricks, who would be delighted when we conclude this testimony to answer any questions that Mr. Chairman may desire to ask concerning the local feeling in the Saltville area as to this project.

They are here to tell you, if you so desire, that the overwhelming majority of the people in that area are supportive of going forward with this project. I will introduce the other people, as I have asked them to say a few words for the purpose of your record.

We will not read the information that we have previously filed with the committee. Mr. Randall Montgomery, who you know, and has been before you before is the president of the Saltville Underground Storage Co. And, Mr. Montgomery, would you like to share your thoughts for the committee?

Senator WARNER. Governor, we will put in the record that documentation that you deem appropriate together with those statements that accompany that documentation. Your witnesses may then feel free to address the high points knowing full well that the full record will be available to this subcommittee and the full committee.

[The prepared statement of Governor Dalton follows:]

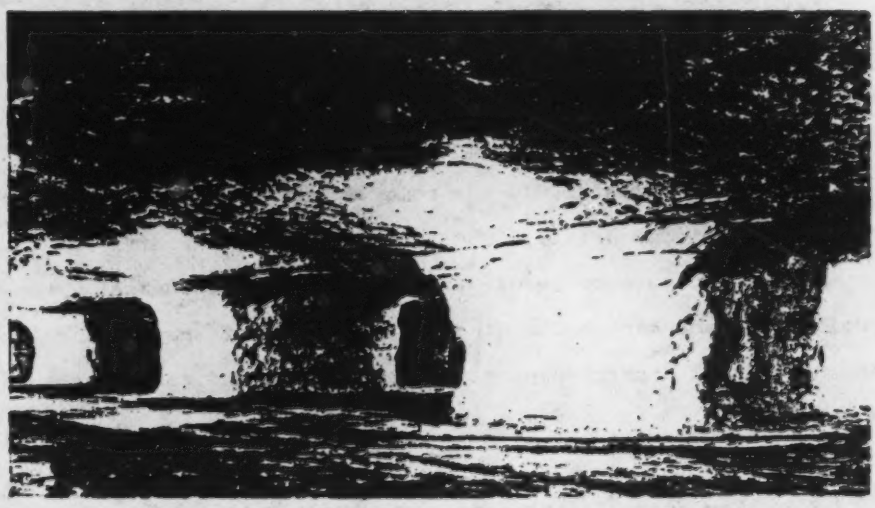
STATEMENT

SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

ON

STRATEGIC PETROLEUM RESERVES REGIONAL STORAGE

MAY 6, 1983



Saltville Underground Storage Company
Great Midwest Corporation
Dillingham Construction Inc.
Rock Tank
Norfolk Southern Corporation
Itaska, Inc.

STATEMENT TO

THE SUBCOMMITTEE ON ENERGY & MINERAL RESOURCES

of

THE SENATE COMMITTEE ON ENERGY & NATURAL RESOURCES

Chairman: The Honorable John W. Warner

May 6, 1983

I. INTRODUCTION

Saltville Underground Storage Company (SUSCO) is an advocate of a program which will accelerate the SPR fill rate. SUSCO believes that an accelerated fill rate will substantially enhance the SPR program. In its remarks today, SUSCO will address this point in some detail. SUSCO has joined with experts in underground storage crude oil transportaion, geotechnical engineering and management, and possesses all of the technical and managerial expertise necessary to propose and carry out such a program.

The essential element of the program is the acceleration of East Coast regional storage for the SPR Program thereby reducing East Coast vulnerability to an interruption of crude oil supplies resulting from interdiction or any other cause. SUSCO is the owner of a strategically located East Coast underground

facility, known as the Worthy Mine, which will store approximately 21.5 million barrels of crude oil.

The technical, environmental and economic feasibility of the Worthy Mine concept has been studied in depth. Not only is it feasible but it will be less expensive than Gulf Coast salt dome storage. The Worthy Mine concept adds the flexibility and redundancy that a strategic reserve must have in order to maximize the benefits of the free market concept and minimize the adverse economic impact of unstable world oil prices.

This administration has inherited an SPR Program that was system engineered for a world different from the one in which we live today. The Program has been substantially improved by the new DOE Management concept and the engineering studies which are being conducted to enhance the operating capability of the existing SPR sites to fit the needs of the real world. SUSCO supports these studies and believes that they will enable DOE management to unlock itself from the engineering constraints it has inherited.

The present SPR Program fails to take into account that the Caribbean is a magnet for adventurism. The shipping lanes for moving SPR oil to the East Coast refineries from the Gulf States pass directly move through these waters. Havana is closer to these shipping lanes than Dulles International Airport is to the Capitol here in Washington, D.C. A recent AP news release

quoting U.S. military officials stated that Soviet submarines were recently spotted within 50 miles of the Louisiana shore. Since crude oil pipelines to serve East Coast refineries are non-existent, all crude oil must arrive on the East Coast by ocean going tankers. While SUSCO agrees with DOE's position that imported oil is saving fuel for the nation, this practice has made the East Coast 100 percent dependent on imported oil. On the other hand, the mid-continent and Gulf Coast refineries, based on their current production, utilize secure inland domestic crude oil for 75% of their production and are only 25% dependent on imported oil.

The current deliverability of the SPR Program is 1,700,000 barrels per day, and the East Coast refineries have a capacity of 1,700,000 barrels per day. Therefore, there is a strong argument that 100% of the currently deliverable reserves should be located on the East Coast.

SUSCO supports the free market concept advocated by the DOE. SUSCO also recognizes that the 10% set-off concept which recognizes the vagaries of the free market is necessary to protect East Coast consumers. However, the free market concept is a coin with two sides. If it is wise to allocate a scarce resource based on price it is equally wise to acquire a scarce resource (SPR Inventory) when supplies are in abundance, deliverable and relatively inexpensive.

In this report, SUSCO will present an overview of the current SPR Program and SUSCO's proposal to improve it. The report focuses on the East Coast, and discusses certain relevent issues in more detail. The report's conclusion is that the SPR Program must be enhanced and that priority must be given to providing a safe, secure warehouse that will allow acceleration of the fill rate.

The principals joining with Saltville Underground Storage Company in presenting this report and advocating the Worthy Mine concept are as follows:

Mr. Randall Montgomery, President, Saltville Underground Storage Company.

Mr. Forrest R. Browne, President of Great Midwest Corporation. Great Midwest is the managing party and operator of major underground storage facilities.

Mr. Donald R. Woodard, Vice President of Planning and Development for Great Midwest Corporation, President of the American Underground Space Association.

Mr. Douglas Baker, Vice President of Dillingham Construction, Inc. Dillingham is the constructor-engineer of major underground facilities including the Washington Metro Subway System and the Chicago Water Disposal System.

Mr. Magnus Bergman, Itaska, Inc. (also representing Rock Tank). Rock Tank is a major designer of hard-rock underground oil storage facilities around the world. Mr. Bergman is also Foreign Editor of the American Underground Space Association Journal.

Mr. Brady Anderson, Norfolk Southern Corporation. Norfolk Southern is a transportation and distribution company.

Mr. Carl Sherman, Professor, Petroleum Engineering School, Pennsylvania State University. Mr. Sherman is an expert on East Coast energy matters.

II. SUSCO CONCEPT

SUSCO's concept for enhancement of the SPR Program has four major elements. They are as follows:

1. An increase in the fill rate of the 750,000,000 barrel strategic petroleum reserves while supplies are relatively abundant and transportation costs are low; and,

2. Reliance on the free market to allocate crude oil supplies in times of import supply interruptions provided that the SPR is designed and operated as a natural monopoly; and,

3. Regional storage sites to serve noncontiguous refinery centers; and,

4. Utilization of the Worthy Mine to provide a secure East Coast inland warehouse full of deliverable crude oil.

The SUSCO concept is the product of nearly six years of research and analysis by a study team which looked closely at the ability of the SPR to function in an emergency and found it deficient. An exhaustive study of available sites on the East Coast was made and the conclusion was reached that the Worthy Mine contained all of the physical characteristics necessary to enhance the SPR Program. Each of the elements of the SUSCO concept is discussed in more detail in the following sections and specific information concerning the concept or details of the physical properties of the Worthy Mine will be furnished upon request.

III. INCREASE IN SPR FILL RATE

The worldwide supply of crude oil and the ability to transport it to the market are currently adequate to meet the 750 million barrel demand of the SPR. In addition, the price of oil is to offset international sales. The combination of these factors provides a great and present incentive to fulfill the objective of the SPR Program. We must remember that to possess such a reserve is a national asset, more functional than the gold in Ft. Knox in times of national emergency. In addition, a

completed SPR Program will provide insulation against future shocks as the world price for oil fluctuates wildly with a supply/demand market.

These are indisputable facts which support SUSCO's advocation of an increase in the fill rate of the SPR to achieve its goal. At present, the only impediment to full implementation of the SPR is the lack of well placed warehouses with connections to a secure distribution system. Moving as fast as possible to fill the SPR seems advisable since the present favorable economic climate and the passage to the East Coast through safe waters could change drastically without notice.

The system engineering concept (inherited by this administration) of placing all of the 750,000,000 barrels in Gulf Coast salt domes to serve all the nation was based on a national convenience theory. But placing a $40 billion asset in four or five sites dependent on an infrastructure untested for a project of this magnitude and expecting it to function in fail-safe manner for the East Coast overreaches the capabilities of the system and endangers our national security. In addition, it is more expensive than providing SPR sites on the East Coast. Electronic surveilance, management and dispatching make it possible for such projects to be widely dispersed without adding any significant operating costs.

If it is determined by this administration that time is of the essence and a nearby stockpiling of inventory for the East Coast refineries can be accomplished for a cost which is less, or no more than, the cost of Gulf Coast salt domes, we offer our existing facilities and our expertise for use in developing East Coast sites.

IV. FREE MARKET ENHANCEMENT

This administration has clearly articulated the policy of reliance on the free market to allocate oil supplies during times of shortage. We believe that this is a wise policy which can be enhanced by recognizing that the coin has two sides. Supplies of crude oil should also be acquired based on free market concepts. Acquistion of crude oil inventory should take place when supplies are in abundance, deliverable and relatively inexpensive, as they are now. The ten percent "set off concept" recognizes the vagaries of the free market by affording some measure of protection to the East Coast consumer.

Acquiring crude oil inventory under the best terms and conditions and subsequent delivery during an emergency requires the acquisition of warehouses located in such a manner that the distribution can be effectuated on relatively short notice. We view the SPR as a natural monopoly, which should have a high degree of reliability and flexibility equal to, or greater than, that which is required of all public operations (such as the

military, public utilities, railroads and airlines) which operate in the interest of national security, public health and safety. In all natural monopolies, one finds a great deal of redundancy, flexibility, dispersement, planning, risk reduction, management training and hardware deployment. These elements are necessary in order to assure that the system can be responsive to any conceivable interruption.

These concepts have been highly developed in the military, less so in the utilities and airlines, and only slightly comprehended in most free enterprise industries. The SPR is our front line defense for supply and price stabilization and thereby warrants considerable attention even if the cost of obtaining adequate flexibility is high.

We perceive that the original system engineering concept upon which the SPR Program was based was one of national convenience and not one of national security. Clinging to the inherited system engineering concept will hamper the present and, we believe, wiser management policy of the DOE which is based on free market and national security concepts. We submit that this administration should re-evaluate the system engineering concepts it has inherited, and unlock itself from the physical constraints they place upon service for the East Coast. Freedom from the old constraints will enhance the opportunity for strategic distribution and allow the pricing system to function properly in the event of a disruption.

We also perceive that this administration has recognized the basic flaws in our SPR Program, and is now re-examining the strategic distribution system and conducting other system engineering studies with a view to enhancing the Program. Unfortunately, the original SPR concepts did not fully complete the loop of acquiring, transporting, storing, distributing and pricing. They dealt primarily with acquiring, transporting and storing. As we now confront the problems of distributing and pricing the reserves, we may need to modify previous decisions in order to arrive at a fully integrated whole.

In the past, the SPR Program has been focused on acquiring and storing inventory without the responsibility of meshing these aspects of the Program into an orderly pricing policy or flexible distribution plan. This administration has now addressed a portion of the pricing policy, has materially increased inventory and is conducting studies to create flexibility in the distribution plan for those refineries not connected to sources of supply by the crude oil pipeline network. The latter is demonstrated by its recent effort to provide for barges and coastwise tankers. This administration is certainly entitled to credit for recognizing these shortfalls in the system.

In the event of an emergency, natural monopolies tend to provide service first and price that service based on the free

market concept after the emergency has passed. It has been suggested that pricing of SPR oil be effected through the sale of options for the oil prior to distribution. We oppose this approach and suggest that crude oil pricing policies for the SPR can be enhanced by reliance on the free market at or after the time of distribution as opposed to reliance on a system of futures or options which is based on the unknown rather than fact.

Unless there are SPR reserves nearby, the East Coast refineries will not be in a position to competitively acquire oil in a future pricing policy context without adversely affecting the world price for crude oil. This effect would be more pronounced if the scarce inventories for which the East Coast refineries are competing are located in Gulf Coast salt domes which are more accessible for the Gulf Coast and mid-continent refineries. Recent increases in the rates charged by coastwise tankers demonstrate the sort of additional costs the East Coast refineries are likely to bear.

V. SPR REGIONAL STORAGE

At present, this nation's entire supply of reserve oil is located in one geographical area yet the demand for that oil in the event of supply disruptions will be nationwide. The only refineries with direct pipeline links to the present reserves and domestic crude oil supplies are those located in the

mid-continent and Gulf Coast states. The East Coast, West Coast, Alaska, Puerto Rico and Hawaii have no such access to the reserves.

The typical refinery maintains less than a 15 day inventory. Any interruption in normal crude oil supply will affect these refineries and if the interruption is prolonged, they may be forced to curtail production. If the free market controls, the rational economic decision for the East Coast refineries would be to shut down during the interruption. Such an event would literally paralyze the East Coast which normally can depend on its 17 refineries with their 1,700,000 barrels per day capacity to meet its energy needs.

Because the East Coast refineries are not connected by pipeline to either the domestic production sites or the SPR, they are totally dependent on ocean-going tankers for their crude oil supply, which constitutes about one-third of total U.S. imports. As the DOE has stated, imported crude oil makes up a relatively small percentage of our total energy requirements and, therefore, is the "swing" fuel for the U.S. Unfornately, what is "swing" fuel when one looks at the country as a whole, changes its character when considered on a regional basis. The nation's "swing" fuel is the East Coast refineries' major source of supply. Therefore, a strong argument exists that all of the SPR sites should be on the East Coast, with the Gulf Coast refineries using domestic production during supply interruptions.

The ability to draw from the SPR in the present location is so constrained by the infrastructure (power, pump capacity, pipelines, loading docks, etc.) that it would take the entire deliverability of that system to maintain normal flow of crude oil to the East Coast. To do this would eliminate any other region expecting to benefit from the SPR. Unfornately, there are not now enough qualified coastwise tankers to maintain the necessary flow of crude from SPR withdrawals to maintain normal production on the East Coast alone.

If the supply interruption is not military in nature it would take longer to muster the necessary ships to draw upon the SPR than the refinery inventories would allow for continuous production. If the interruption is military in nature, it would be impossible to serve the East Coast or any other noncontiguous region with crude oil from the existing SPR.

There is a strong presumption in the Energy Policy and Conservation Act (EPCA) which authorized the creation of a domestic strategic petroleum reserve that the SPR would include regional storage sites. However, EPCA permits storage of crude oil in a nearby region to be substituted for regional storage if it will result in comparable protection for the region. SUSCO submits that the present SPR Program does not, and cannot, provide protection for the East Coast comparable to regional storage sites. The only solution to the problems which will arise for the East Coast if there is a supply interruption is to provide regional storage.

Regional storage at inland locations on the East Coast would also have other advantages over the present system. They would provide secure supplies for East Coast refineries. Regional storage would enable any area of the country to compete effectively in the world market. Finally, regional storage sites such as the Worthy Mine could be readied for use more rapidly than salt domes can be constructed or converted, thus permitting acceleration of the fill rate when the world supply of oil is adequate and relatively inexpensive.

VI. WORTHY MINE CONCEPT

SUSCO owns an existing hard rock underground warehouse near Saltville, Virginia, which has a capacity of 21,500,000 barrels. This is equivalent to the volume of 10 Empire State buildings, 3¼ Pentagons, or 166 Washington Monuments. If filled to capacity, Worthy Mine could hold over 12½ times the total daily capacity of all 17 East Coast refineries and approximately 3% of the total approved SPR volume.

Given authority to proceed as expeditiously as possible, SUSCO could ready this space in a matter of a few months to accept oil at today's known prices. The crude oil stored at Worthy Mine would be distributed by tank-trains and barges over secure inland rail and intercoastal waterways; no new distribution systems would be required, nor is any new technolocy involved.

26-459 O - 83 - 11

The oil would be lifted by pump from 400 feet in the Worthy Mine as compared to 4,000 feet in the salt domes. There will be no saline water disposal problems and repeated filling of the Worthy Mine will not deteriorate the structure. It would be by far the most economical of all underground structures utilizied by the SPR.

As shown in the table below, the turn-around transit time to East Coast refineries would be dramatically reduced by use of Worthy Mine as would the number of ships and amount of naval escort duty required to maintain a secure ocean going distribution system for the East Coast supplies in the event of a military conflict. If it is determined in the event of a disruption that East Coast refineries should operate at capacity, it would require 100% of the current deliverability of the Gulf Coast SPR oil and 50 to 100 coastwise tankers to transport the oil to the East Coast refineries.

TIME OF TRANSIT

(days-hours)

AT 15 KNOTS

ROUND TRIP - TO:	NORFOLK	HOUSTON
North Sea	21	28
Alger	21	28
Brass River	27	33
Ras a Tannurah	68	69

	NEW YORK	PHILADELPHIA	BALTIMORE
Norfolk	1 - 15	1 - 12	0 - 23
Houston	10 - 15	10 - 12	10 - 5

Hard rock warehouses provide relatively safe sites which are out of sight, isolated, pollution free and environmentally acceptable. Such a site is capable of operating at a constant rate, indefinitely, without concern for eroding or dissolving the walls and structural supports of the warehouse. The Worthy Mine will not require eight barrels of fresh water to create each new barrel of space as will a warehouse in the salt dome nor will it have the pollution problems which accompany disposal of salt brine created by salt dome construction. Also, hard rock mines do not require an equivalent volume of fresh

water to displace the oil from the warehouse at the time of utilization and do not have the pollution problems associated with disposal of this water which turns to brine and is expelled when a salt dome the warehouse is refilled with oil. Historically, the saline disposal system required to function in the salt domes has been elaborate and trouble prone.

The time to construct and the energy costs which are incurred in connection with salt dome warehouses, plus the shipping costs for delivery of the oil to Houston and then for backhaul to East Coast refineries (likely to be at premium prices), is to be compared with the relatively simple conversion of the Worthy Mine. By utilizing the Worthy Mine, oil can be purchased from the North Sea area, for instance, at known prices and transportation costs and transported and stored in the completed warehouse near the East Coast refineries within months. Norfolk Southern has examined SUSCO's proposed distribution methods and the cost thereof and found them to be more reliable and less expensive than the oceangoing tanker distribution system currently proposed for East Coast refineries.

Tank-trains can be acquired for Worthy Mine at a known cost and can be ready to function as needed. This is not a new concept. Several tank-trains are in operation today and one has been purchased recently by a major company to haul similar volumes under similar service.

Several technical experts have examined the Worthy Mine for its technical competence and environmental safety. Among these were America's leading underground constructor-engineers, Dillingham Construction Inc., and the Swedish underground experts, Rock Tank. There are about 250 sites around the world that operate on the principle proposed for use at Worthy Mine. Also, several geologists, hydrologists, chemists and rock mechanics have investigated the Worthy Mine.

Great Midwest Corporation, which owns, manages and operates one of the world's largest and most complex underground facilities located in Kansas City, Missouri has agreed to provide management and underground expertise to the Worthy Mine project.

SUSCO and its team of experts are prepared to offer a turn-key bid to acquire 21,500,000 barrels of crude oil on the world market and to transport, off-load, move by tank-train, store, operate, maintain, drawdown and distribute the oil as directed by the DOE at a price equal to or less than what comparable service will be for East Cost refineries using Gulf Coast salt domes, subject to a mutually agreeable commitment.

In the event that Worthy Mine is considered for storage of SPR inventories, the principals of SUSCO are prepared to furnish all necessary information and answer any questions concerning this proposal, and would be pleased to meet with the Department of Energy or any other properly designated group to discuss the merits of the Worthy Mine concept. SUSCO is also available to assist generally in conceptual planning for the SPR.

STATEMENT

of the

NORFOLK SOUTHERN CORPORATION

on

WORTHY MINE SELECTION

for the

STRATEGIC PETROLEUM RESERVE

before

THE HONORABLE JOHN WARNER, CHAIRMAN

SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

Washington, D. C.

May 6, 1983

10:00 a.m.

Mr. Chairman, thank you for the opportunity to express the support of Norfolk Southern Corporation for the proposal of Saltville Underground Storage Company to establish a strategic oil reserve at Worthy Mine, near Saltville, VA under the Federal Strategic Petroleum Reserve Program.

My name is Brady H. Anderson. I am a Senior Market Analyst with the Norfolk Southern Corporation - a holding company headquartered in Norfolk, VA. It controls two of the most important Class I rail carrier groups in the United States - the Southern Railway System and the Norfolk and Western Railway Company.

Norfolk Southern believes that the proposal advanced by the Saltville Underground Storage Company (SUSCO) is a viable and economically competitive storage plan for strategic petroleum reserve crude oil. We are convinced this concept is sound, requiring no new technology, and that the proposal of SUSCO is deserving of full consideration by the Department of Energy in the face of the current capacity shortage in the strategic petroleum reserve system.

Norfolk Southern's Norfolk and Western subsidiary operates a first-class rail line running between the Port of Norfolk and Saltville, VA. Thus, the basic transportation network is in place and is capable of handling strategic reserve oil into and out of storage. Some new construction would be required to move the oil from the railhead to storage at the mine; however, these costs have been taken into account, and it is our assessment that

the Worthy Mine concept is a very sound alternate storage plan from the standpoint of economics.

The Department of Energy has in its possession all of the studies and other data developed by Saltville Underground Storage Company and Norfolk Southern relative to the economics of the proposal. It is our hope that the Department of Energy will again take the Worthy Mine proposal under active consideration as an alternate storage site.

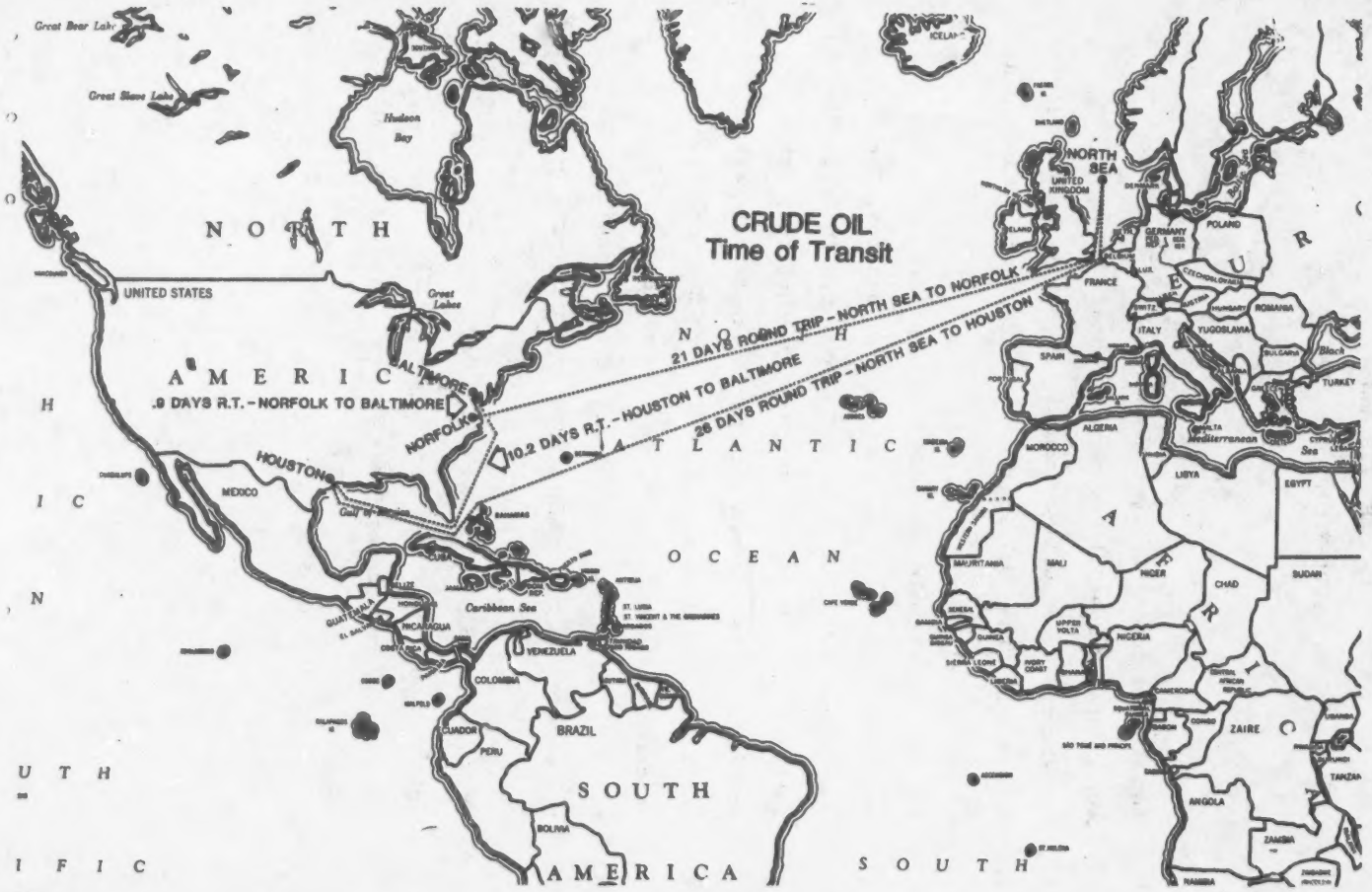
Norfolk Southern's Norfolk and Western subsidiary has extensive experience in moving heavy volumes of traffic through mountainous terrain, as evidenced by our handling of trainloads of coal from Virginia and West Virginia mines to Norfolk for export. We believe we can efficiently and economically move the volumes of oil contemplated by the Saltville Underground Storage Company, and we stand ready and willing to work with them in this program. The concept of rail unit train transportation, as proposed in the SUSCO plan, has been applied successfully in other parts of the country in the movement of large volumes of liquid bulk products, and Norfolk Southern believes the concept can be applied to the movement of crude oil to and from a strategic reserve at Worthy Mine.

Once again, thank you for the opportunity to present these views. We are eager to work with the Department of Energy to move this project forward.

EXHIBITS AND

SUPPLEMENTAL INFORMATION

1. Map showing Crude Oil Time of Transit to U.S.
2. Map showing Crude Oil Movement by Water around U.S.
3. Map showing Crude Oil Movement by Pipelines in U.S. (1974).
4. Map showing Crude Oil Pipelines of the United States and Canada (1981).
5. Map showing Norfolk Southern Rail Routes.
6. April 20, 1983 Newspaper Article from Houston, Texas concerning Soviet Warships and Submarines in Gulf of Mexico.
7. April 15, 1983 Newspaper Article from Houston, Texas concerning rate increases in Caribbean tanker market.
8. April 20, 1983 Newspaper Article from Houston, Texas concerning signs of shortages in world oil market.
9. March 23, 1983 Newspaper Article from Tulsa, Oklahoma concerning use of unit train to move crude oil by Shell Oil Co.
10. Information concerning Rock Tank Group.
11. Information concerning Tank-Trains (GATX).
12. Information concerning Great Midwest Corporation (not bound).


CRUDE OIL
Time of Transit
21 DAYS ROUND TRIP - NORTH SEA TO NORFOLK
.9 DAYS R.T. - NORFOLK TO BALTIMORE
10.2 DAYS R.T. - HOUSTON TO BALTIMORE
26 DAYS ROUND TRIP - NORTH SEA TO HOUSTON
NORTH SEA
UNITED STATES
BALTIMORE
NORFOLK
HOUSTON
MEXICO
Caribbean Sea
VENEZUELA
COLOMBIA
ECUADOR
PERU
BRAZIL
BOLIVIA
SOUTH AMERICA
NORTH ATLANTIC OCEAN
UNITED KINGDOM
FRANCE
GERMANY
POLAND
ITALY
SPAIN
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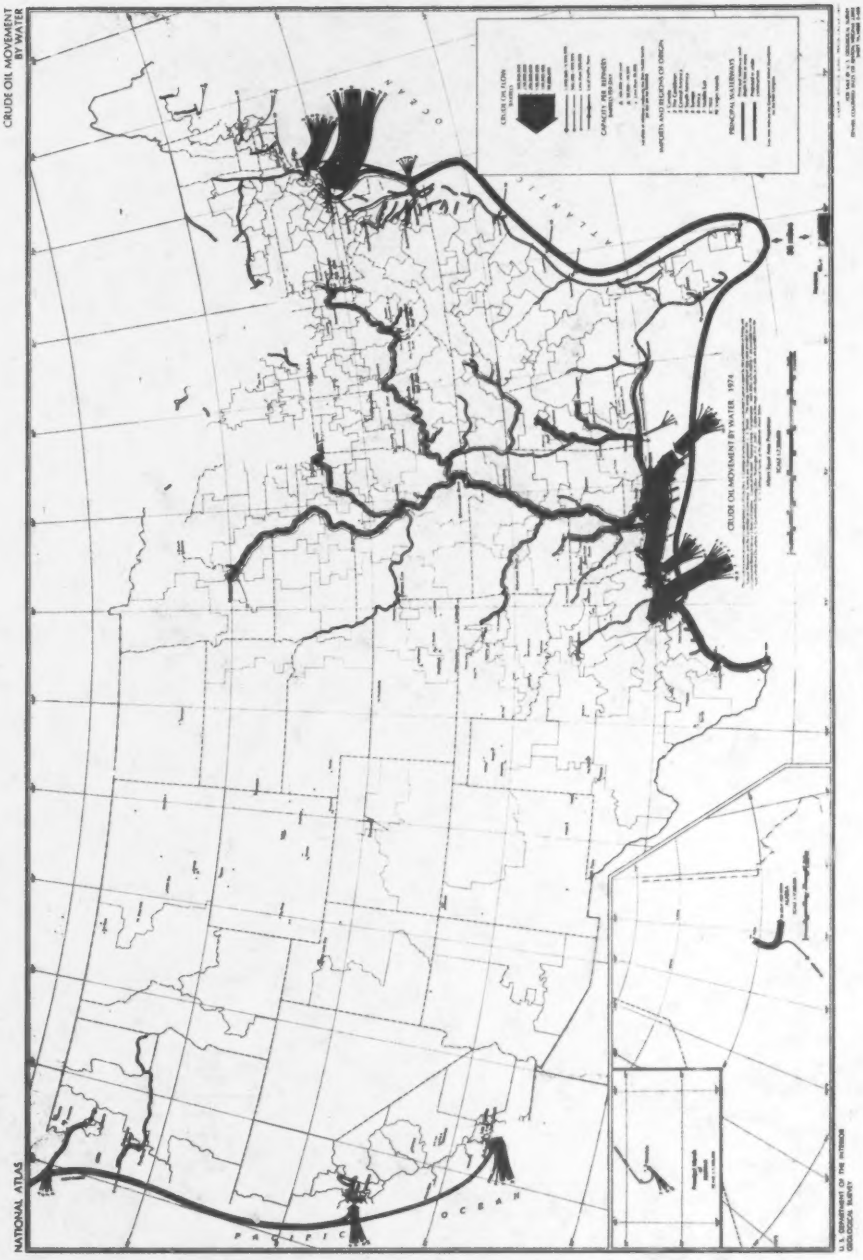
CRUDE OIL MOVEMENT BY WATER
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GEOLOGICAL SURVEY
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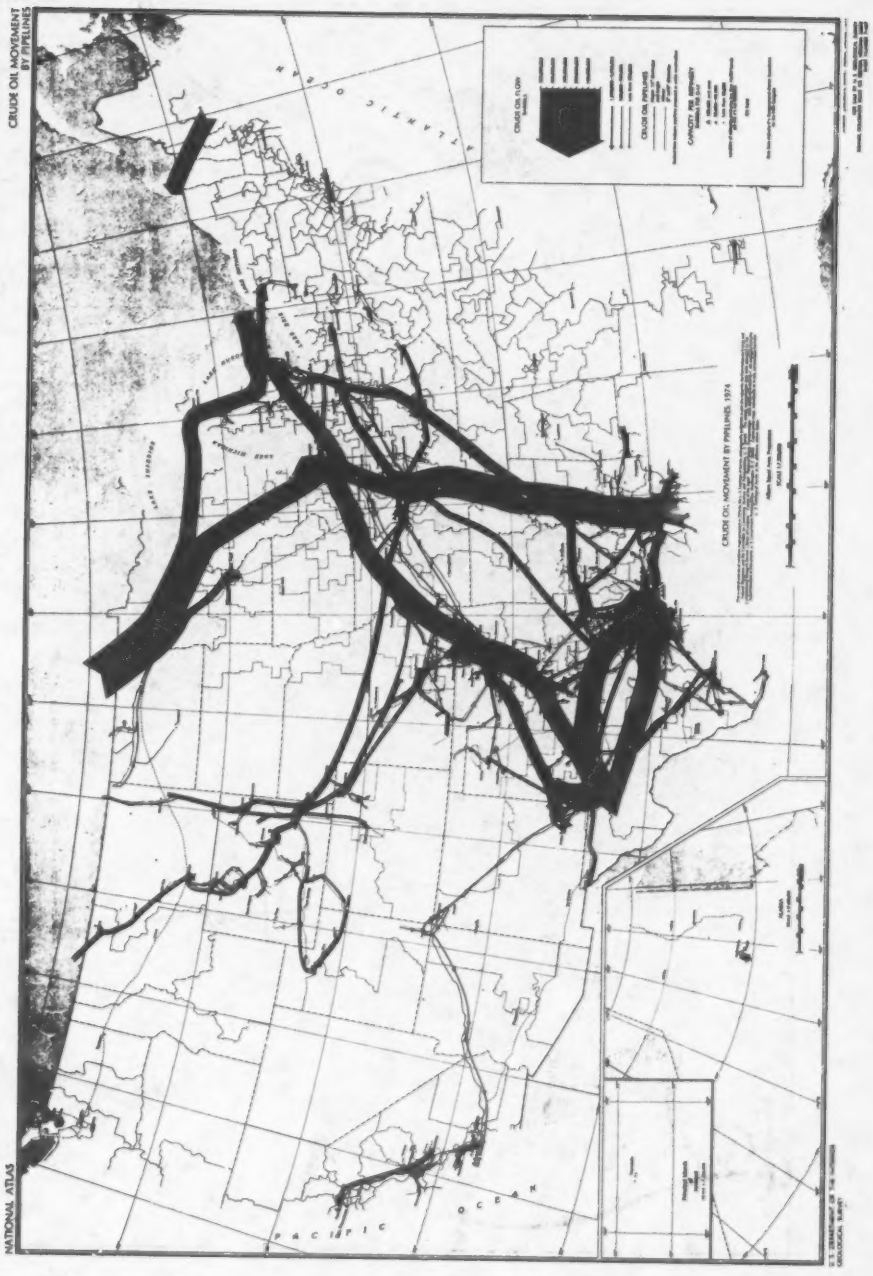
CRUDE OIL MOVEMENT BY PIPELINES
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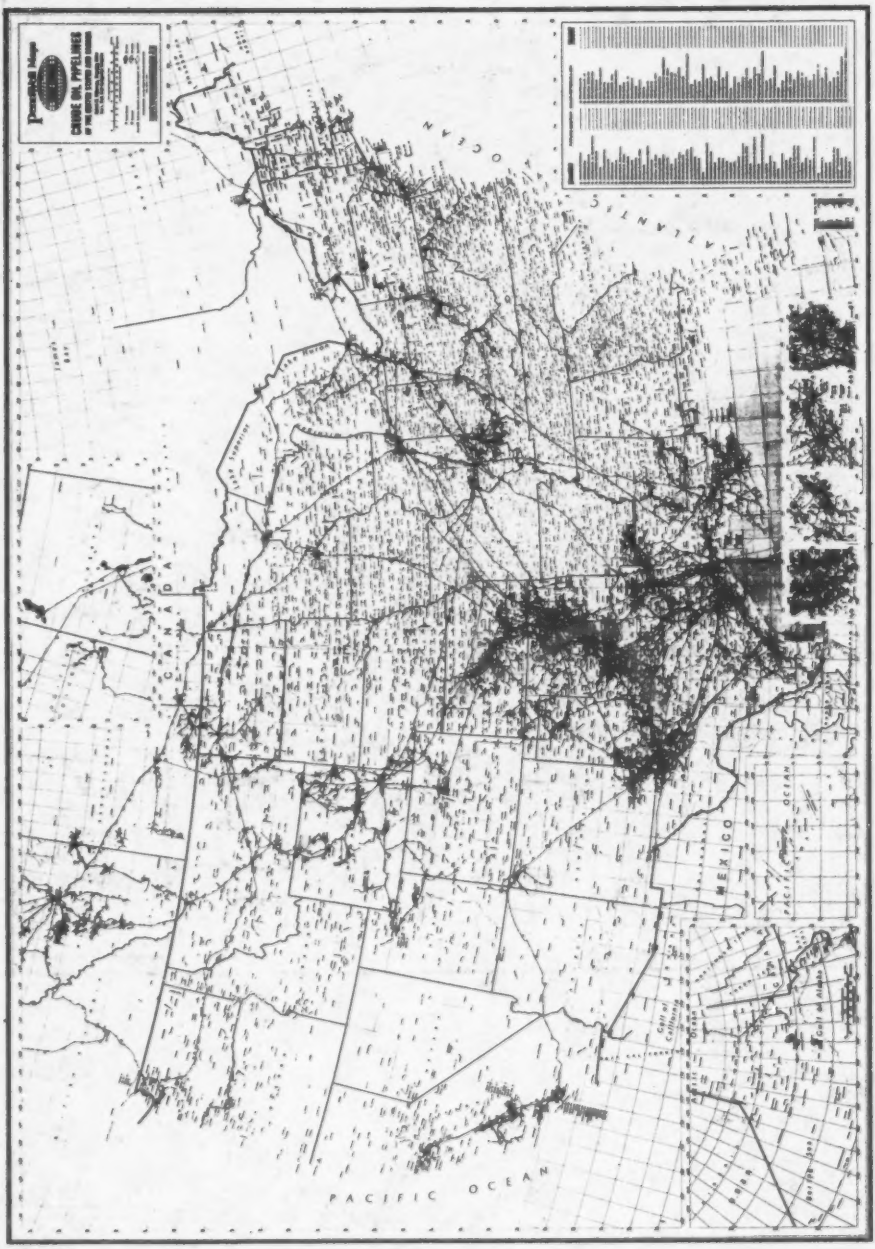
ATLANTIC OCEAN
PACIFIC OCEAN
CRUDE OIL MOVEMENT BY PIPELINES, 1974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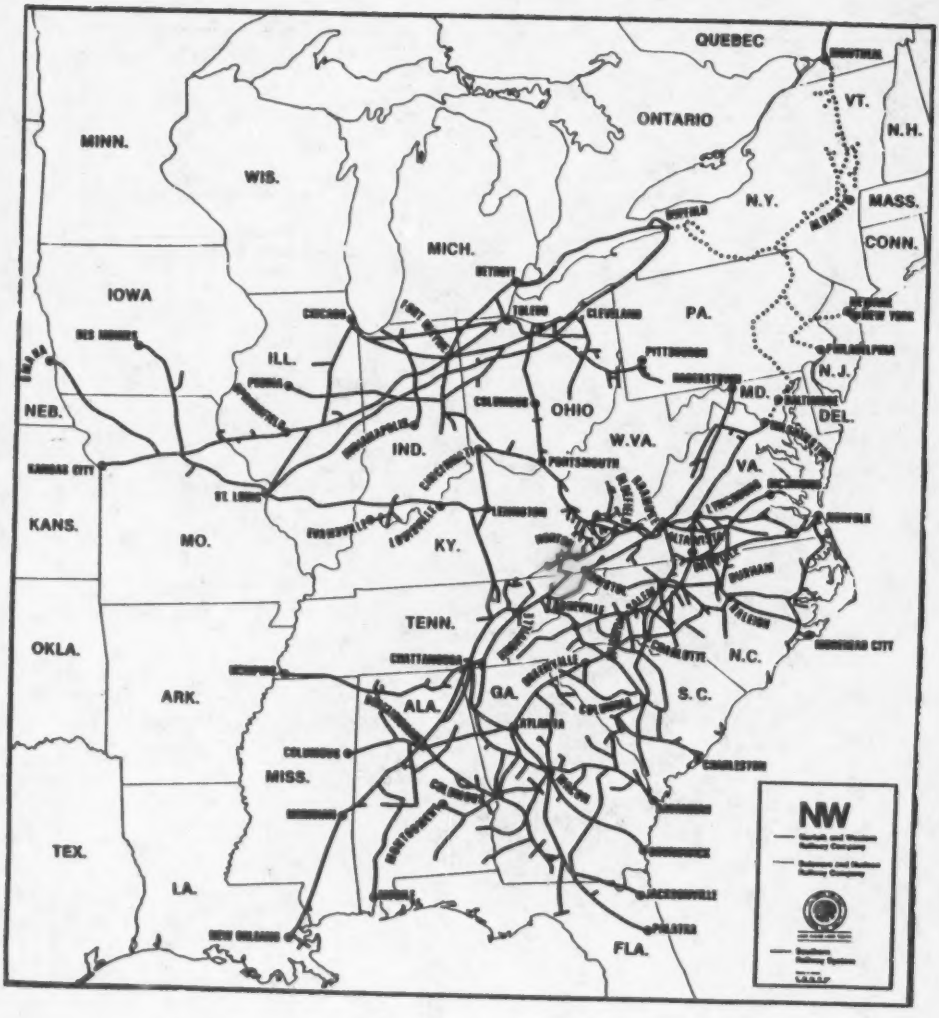
QUEBEC
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Military says Soviet warships, submarines cruise Texas coast

HOU 4/20/83

PORT ARTHUR (AP) — Soviet warships and submarines routinely cruise the Texas coast and were spotted within 50 miles of the shore 2½ months ago, military officials said.

"They could be on information-gathering missions, masked as fishing fleets monitoring airwaves, phone calls, mapping the surface or observing shipping trends," Lt. Col. Richard Zucker told The Port Arthur News in a story published in Tuesday's editions.

Zucker, chief of long-range planning for the Air Force, said the patrols are apt to become more frequent because the United States has detected increased military activity by the Soviets in and around Cuba.

"The Soviets have three classes of submarine — Typhoon Class, Yankee Class and Victor Class," said Zucker, who is stationed at Randolph Air Base in San Antonio. "These subs are on constant patrol on our coastline, we feel like they're out of the Cuban area."

Information gathered by Naval intelligence sources indicates that the last time the Soviets were spotted near the Texas shoreline was between Nov. 25, 1982, and Feb. 1, 1983, said Lt. Aaron Long, a spokesman for the Navy in Washington, D.C.

Military intelligence spotted a Soviet guided missile cruiser, a guided missile frigate, a diesel submarine and a replenishment ship, he said.

"We know they came into the Gulf of Mexico and proceeded up the coast, making a semi-circle at some point in the Gulf," Long said. "They came within 50 miles offshore from the Texas-Louisiana border."

Foreign warships can come as close as three miles from the U.S. shore along the Gulf of Mexico without violating existing agreements and international law, said Capt. Tom Matteson, head of the Coast Guard's Region 8, headquartered in New Orleans.

Information about sightings of foreign war ships in international waters along the U.S. coastlines is available to the public, Zucker said. He said President Reagan decided about one year ago to declassify such information.

Port Arthur Civil Defense Director Bob LeBlanc said the patrols create "a very uncomfortable feeling."

Recalling the Soviet sub which ran aground on the coast of Sweden last August, LeBlanc said, "that could happen here."

Tanker market now has a few bright spots

BY HAZEL DUFFY
© 1983, Financial Times

LONDON — Shipbrokers, casting around for signs that higher rates in some trades might be sticking settled for the Caribbean tanker market as one bright spot.

Galbraith Wrightson commented on "a considerable increase in demand."

Prospects for rate improvements in the U.S. coast market were "probably quite good."

E.A. Gibson reports a much improved amount of fresh inquiry in the areas, enabling rates to show substantial improvements, but Galbraith's sounds a cautionary note on the Caribbean/U.K. and Continent trade, where low figures still apply.

West Africa and the Mediterranean have also come up with increased enquiries for tanker tonnage, although the excess of supply over demand in West Africa, in spite of Nigerian oil prices holding firm, have held rates at very depressed levels.

The dearth of activity in the Gulf states, however, provided no prospect of any improvements in VLCC rates. The enormous problems in securing any type of employment for these vessels makes rates almost of secondary iimportance, Galbraith suggests.

Ship sale reports point to buyers beginning to turn their attentions to larger bulk carriers — a Norwegian-owned 118,000 tons deadweight, built in 1976, had been committed to London Greek buyers at a price in the region of $9.85 million — while smaller bulk carrier sales continue to confirm the upward trend in prices.

Brokers report the sale of a 26,000 tons deadweight the New Westminster City, under the British flag built in 1972, for around $5 million to Greek buyers.

The dry cargo charter market was reported rather dull by Denholm Coates.

Oil stock shortage signs appear in U.S., Europe

BY RAY DAFTER 4/20/83 HOU
© 1983, Financial Times

LONDON — The first signs of oil stock shortages have begun to appear in U.S. and European markets, according to Peter Baxendell, chairman of Shell Transport and Trading.

Within the industry it is known that the Organization of Petroleum Exporting Countries has been waiting for these signs to indicate that worldwide oil supply and demand is returning to a more balanced position.

Peter, speaking at a conference organized by Surrey University's energy center, said the general perception of a glutted oil market now seemed to be changing.

He described the recent OPEC agreement to limit production levels as significant, adding, "What is impressive is that there does not appear to be very much cheating at the moment."

Peter, who is also senior managing director of the Royal Dutch/Shell Group, refused to comment on the position of his own company's oil stocks. But he said the industry was beginning to see the first signs of stock shortages at gasoline stations and other retail outlets.

When the oil industry as a whole finishes running down inventories, OPEC should see a significant increase in demand — possibly as much as 4 million barrels a day above OPEC's present output agreed under its 17.5 million barrels a day production ceiling.

In recent months, demand for OPEC oil has been unusually depressed, partly because oil companies have been drawing down their stocks.

Peter said if oil prices were to fall lower it was preferable that the decline should happen in an orderly, gradual way. "A rapid and disjointed collapse could cause major international financial problems."

Even an orderly decline could pose potential problems, he said.

Unit Train to Move Heavy Crude

Rails Beat Out Pipeline

By BILL RINTOUL
World Oil Correspondent

BAKERSFIELD, Calif. — Shell Oil Co. is planning to use a special unit train to move heavy crude oil being trucked from Kern County to its Wilmington manufacturing complex at Carson, Calif.

The rail arrangement, more economical than the trucks, can be in service faster than a pipeline and will be more cost effective than building a line because of the [illegible] amounts involved.

The train will operate on a five-day cycle, delivering 20,000 barrels of crude to the refinery at Carson every other day.

If all goes as planned, Shell will begin operation in November.

The train will be made up of 72 insulated tank cars, each carrying 100 barrels or approximately 4,200 gallons. The special tank cars are under construction at the General American Transportation Corp. plant at Sharon, Pa., with delivery expected this summer. They will be leased by Shell.

Shell is constructing a pipeline to carry heavy crude from existing storage facilities near Meadows Air Field in Bakersfield to the Southern Pacific yards in East Bakersfield.

At the Southern Pacific yards, the crude will be loaded into tank cars for the 250-mile run over the Tehachapi Loop to the Shell refinery at Carson.

At Carson, unloading is expected to take about four hours, leaving the unit train for the return trip to Bakersfield for another load.

Shell is California's second largest crude oil producer with approximately 170,000 barrels a day. More than 120,000 barrels a day come from Kern County, principally from the South Belridge Field where Shell produces in excess of 60,000 barrels of oil daily.

Shell is in the midst of an $800 million modernization program of its West Coast refining system that will enable the company to replace Alaskan North Slope crude with heavy California crude in its West Coast refining system.

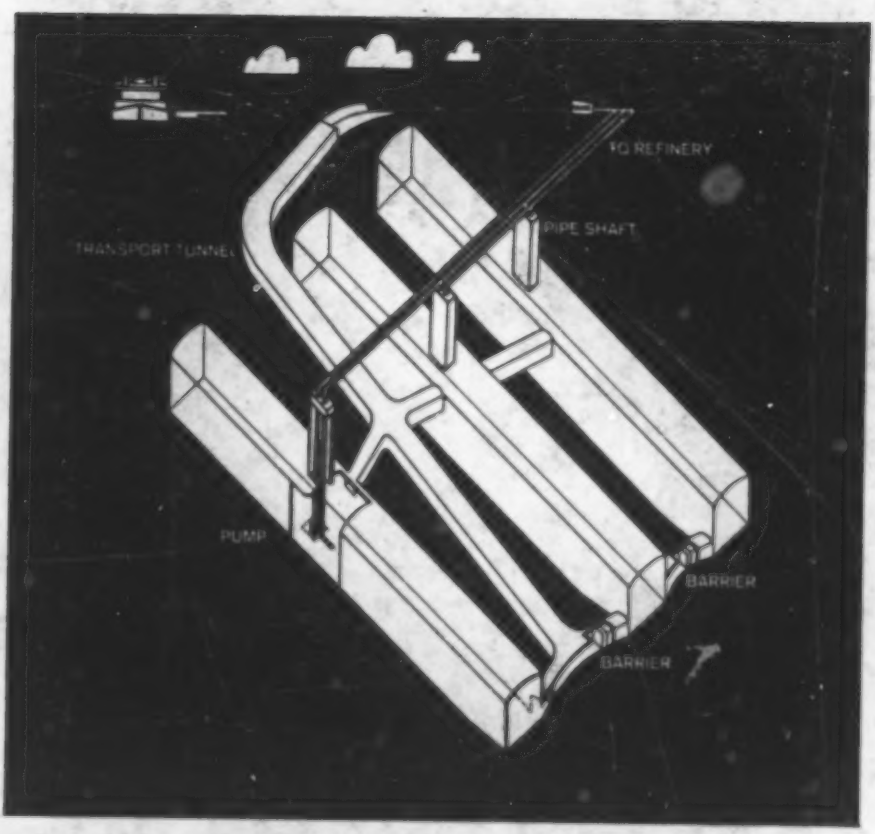
Last August, the company dedicated a $100 million modernized gasoline conversion unit at the Carson plant that will make it possible to make a higher percentage of gasoline and jet fuel from California heavy crude.

The special tank cars will contain facilities to heat the crude oil, making it easier to unload. The cars also will include environmental protection features.

Tank cars have been in use since 1865 when the first one made its appearance in the Pennsylvania oil fields. The tank car consisted of two small wooden tanks mounted vertically on a flat car. The prototype, horizontal tank car came into use in the 1870s and, so, even with many improvements over the years, the basic design has changed little since then.

RockTankGroup
Rock Tanks
for safe and sound
oil storage

The Idea.



Petroleum products were scarce in Sweden during World War II. The country has an abundance of sound bedrock and tunnelling has a long tradition. The obvious solution to protect the limited oil supplies was to store the oil in underground caverns.

Over the last decades, Scandinavian tunnelling methods and equipment have undergone a remarkable development.

So have underground oil storage methods, developed continuously over a period of 30 years.

Today – for reasons of economy and safety – all major crude and refined petroleum stores in Sweden, Norway and Finland are located underground.

Such underground caverns – Rock Tanks – can be used wherever ground conditions permit.

Underground storage caverns are used today at:

- import terminals
- refineries
- petrochemical plants
- distribution depots
- thermal power stations
- strategic reserve stores
- military depots.

How it works.

The function of a Rock Tank depends on two basic facts:

■ oil is lighter than water.
■ oil is immiscible in water.

If a rock cavern is situated below the groundwater table, water slowly seeps in through the rock fissures. If this water is pumped out at the same rate as it enters, a depression can be maintained in the natural groundwater table. This permits the storage of the oil product in the depression, floating on the water in the cavern.

Provided the upper oil level is kept below the highest groundwater level, the oil will stay within the funnel-shaped depression. The flow direction is into the cavern and not out of it. Seepage water entering the cavern does not mix with the oil, but is collected at the bottom of the cavern and is continuously pumped away.

This means that the oil product is stored in direct contact with the rock. No lining is required.

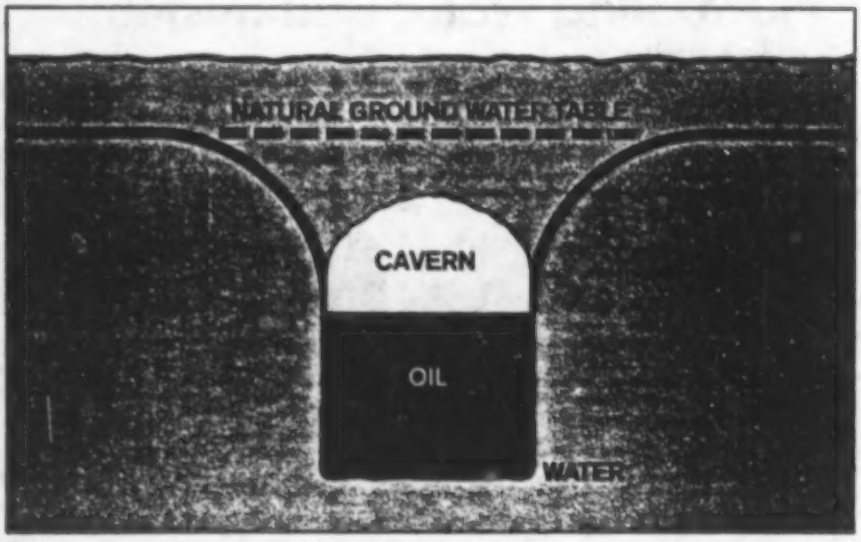
Local reinforcement is made only where the rock stability so requires, and grouting where heavy water seepage occurs.

Normally, only rockbolting is required, possibly in combination with shotcrete.

Caverns with a span of 15 to 20 meters (50 to 65 feet) and a height of 20 to 30 meters (65 to 100 feet) are blasted in good granite or gneiss. In other types of rock, more moderate dimensions are chosen. The smaller cross-section can then be compensated for by adding length to the cavern, or by increasing the number of caverns. A set of parallel caverns is a common configuration.

A sloping access tunnel is used during the construction work to haul out the excavated rock. It is normally plugged with a concrete barrier after construction work is finished and left filled with water.

Each cavern has a vertical pipe shaft covered with a concrete slab through which run all oil pipes, water pipes and control lines. The pipes are connected along an above-ground pipe-rack to the incoming and outgoing mains from the plant.



The Two Methods.

The Fixed Water Bed System.

For less volatile products.

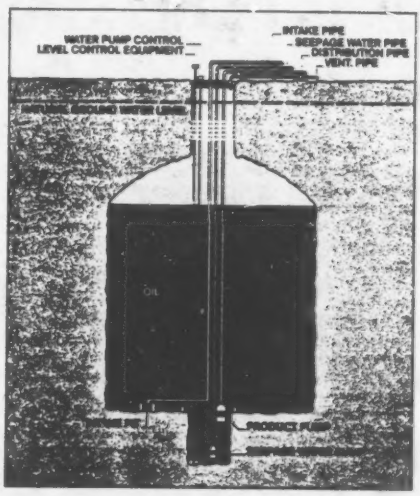
The water level is kept constant against the rim of a low concrete parapet around the sump on the chamber floor.

The water depth is determined with regard to possible accumulation of sludge in cases where crude oil is stored.

The seepage water is pumped out at the same rate as it enters, passing through an oil separator for purification.

The surface level of the oil product varies with the amount stored. The empty space above is gradually filled with a mixture of air and petroleum gases. Explosions are prevented either by ventilating the chamber through a scrubber or by overcarburating the mixture by injecting additional petroleum gases, creating an overpressure. The upper explosion limit is exceeded in this manner. Crude oil is normally stored using this system.

For reasons of economy, most installations are provided with fixed water beds.



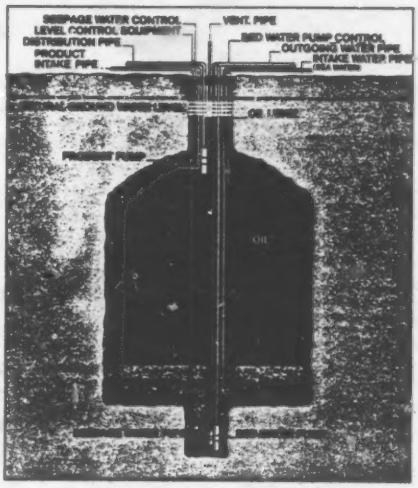
The Fluctuating Water Bed System.

For volatile products.

The upper level of the product is kept constant and well up in the vertical pipe shaft. This minimizes the amount of air/gas mixture allowed to collect above the liquid surface. To keep this surface practically constant, bed water has to be pumped in and out at the same rate as the product is drawn off or delivered to the Rock Tank. With this technique, the bed water level fluctuates up and down with the product volume. In addition, the seepage water will have to be pumped away as it is with the fixed water bed system.

This system is more expensive than the first one. Firstly, the water pumping equipment must have even higher capacity than the product pumping system. Secondly, all the water removed from the cavern – ballast or seepage water – must pass through the oil separator. As a result, the capacity of the separator in the fluctuating water bed system must be considerably greater.

Gasoline storage requires a fluctuating water bed to reduce the explosion hazard.



The Equipment.

Equipment specifications and installation depend to some degree on the type of product stored and on which storage principle is used – fixed or fluctuating water bed. Generally, materials, valves, fittings etc. shall conform to corresponding codes for normal surface installations.

Pumps.

The pumps are of a submersible type. They hang suspended in their pipes and may be hoisted for repair.

Their electric motors operate in water casings with a water level higher than the highest oil level in the cavern. This eliminates the risk of explosion. The water casing system is also used for cooling the motor.

In the fixed water bed system, both the seepage pumps and the product pumps are located at the sump, but at different levels. When a fluctuating water bed system is used, the product pump is located near the oil surface in the shaft.

Controls.

The product pumps are remote-controlled from a central control room located at ground level or underground, as the case may be.

The seepage water pumps, however, are switched on and off automatically by probes located within the cavern shaft. Several sets of probes are used. They send start and stop signals to the pumps and warning signals via alarms to the control room to indicate failures or excessive water or oil levels.

Level indicators.

Level indicators or gauges indicate the level of the liquid product in the caverns. The volume of the Rock Tank is measured prior to commissioning the installation by photogrammetric methods. This provides tables for reading of every 10 cm (4") of filling level. The level indicators give automatic level readings on the central control panel of the installation.

Heating.

Some products, like heavy fuel oil require heating before they can be transported by pumping. This is accomplished by circulating the oil through a heat exchanger.

A great deal of heat is required during the initial period following the commissioning of an underground storage installation. However, once the rock around the Rock Tank has been heated to the saturation point, less heat is required than for conventional storage in insulated surface tanks.

The Economy.

Land Requirements.

A substantial part of the land requirement for a modern refinery is normally set aside for tank-farms, both for crude and for products. If bedrock of reasonable quality is available, the storage facility can be located underground, permitting considerable land savings. The excavated rock may be used for filling purposes or for breakwaters etc. at tanker terminals.

Rock Tanks may extend existing storage facilities without requiring more land. In Sweden, several cavern projects have been executed directly below operating surface tank-farms. The storage cavern may even extend beyond the shoreline and be constructed partly under the ocean floor.

Construction Costs.

The construction cost of an underground installation, including all related equipment, is lower than that of a surface tank-farm, provided the total volume to be stored is more than 30000 cubic meters or about 200000 barrels. This cost advantage increases in proportion to the volume stored. The ever-rising price of steel makes **Rock Tanks** increasingly attractive as an alternative to steel tanks. Rock tunnelling costs in Scandinavia have, in fact, decreased over the past few decades, thanks to the rapid advancement of methods and productivity.

Operating Costs.

Annual operating costs are influenced by a number of factors in addition to the advantages entailed by lower investments.

- **Insurance costs** are reduced by more than 50% as compared to above-ground storage, due to much lower hazards and pollution risks.
- **Reduced heating costs, smaller evaporation losses** and almost **negligible maintenance** costs – no painting! – entail further savings.
- **Overall operating costs** are lower for an underground installation, provided the volume stored is 100 000 barrels or more. Furthermore, this cost advantage is compounded with the increasing size of the storage.

Hazards.

- The risk of **fire or explosion** in an underground storage facility is minimal in comparison to surface installations.
- Although it may seem paradoxical at first, there is no safer place to store oil in regions where **earthquakes** occur than underground. Obviously, **Rock Tanks** provide complete safety against **zunami-waves.**
- **Rock Tanks** cannot be detected from the air and provide protection against both **war hazards and sabotage risks.** This is essential to the authorities responsible for maintaining strategic oil reserves in compulsory oil storage programs. The Swedish storage program is based entirely on underground storage. Some of these stores are equipped with additional protection against war hazards such as shock-absorbing filters and increased rock cover over the caverns.

Environment.

Areas now coming into focus as possible sites for oil facilities like the coasts around the northern part of the North Sea, the Swedish West Coast and the American East Coast, happen to be landscapes of outstanding natural beauty. To the environmentalists, underground storage provides a means of preserving the amenities of the landscape. **Rock Tanks** don't show.

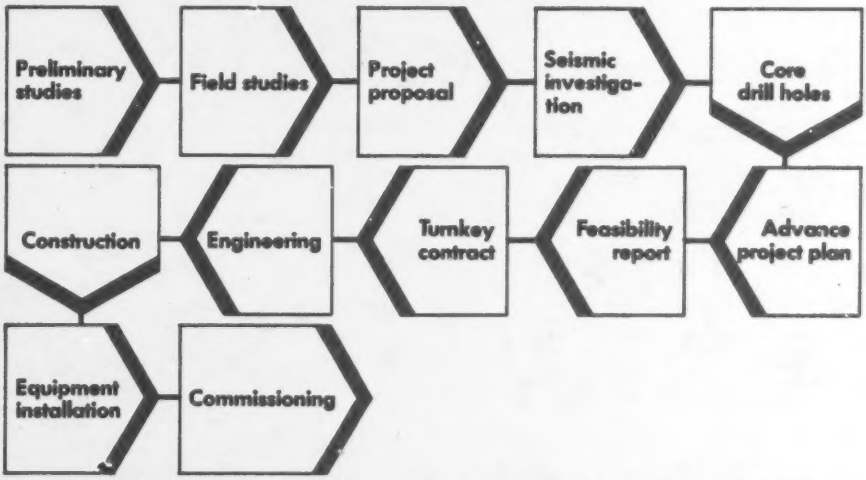
Pollution.

The fact that a **Rock Tank** is situated below the natural groundwater level prevents any oil leakage from the installation. From a conventional surface tank, leaking oil may seep in to the ground, float along the groundwater surface uncontrolled, and appear miles from the damaged installation. With a **Rock Tank** facility this is impossible.

How we work.

It takes a qualified and diversified organisation with ample resources to handle all the problems and activities involved in the various stages of an underground storage project, from the initial feasibility study to the final running-in of installation. The RockTankGroup has been formed specifically for this purpose by two experienced civil engineering contractors and one highly qualified consulting group, all specializing in underground storage facilities and operative on an international level.

We can undertake complete turnkey projects, always in collaboration with the customer's staff or consultants and generally in keeping with the following procedure:



Preliminary studies: Available geological maps are studied together with data on existing wells and previous bore holes in the vicinity. Alternative locations are judged with respect to their geological properties.

Field studies are made by our geologists on the most likely sites. The thickness of the top soil and the level of the natural groundwater table are established. The rock is judged as to its suitability for blasting; the direction, inclination and location of fault zones are observed.

A tentative **project proposal** is made for such locations as are indicated by the foregoing studies to be promising. This proposal forms the basis for negotiation with the customer or the next step of the study:

Seismic investigation of the ground to establish the level of the bedrock and its properties. If the results are encouraging, the seismic study is followed by a few **core drill holes** at different places within the planned installation area to establish zones of weakness, fractuation, permeability and other characteristics of the rock. The cost in Scandinavia for each one of these last two steps is on the order of US $ 5-15000 (1974).

Using the results of the geological reports, we elaborate an **advance project plan** including a cost estimate and a **feasibility report** on the scheme.

Based on the advance project plan, a **turnkey contract** is negotiated with the customer, including final geological survey, detailed civil and mechanical **engineering** and **construction** work, including all **equipment installation** for the complete storage facility ready for use.

When deemed suitable for the customer and the project, we are also open to suggestions for other working procedures than the turnkey contract model, such as stepwise incentive models etc. However, due to the fact that land requirements are less than and somewhat different from a comparable surface installation, we ought to be consulted at an early stage of the project. By saving valuable land for purposes other than storage, you obtain the full benefit of a **Rock Tank** solution.

We are ready to discuss your particular situation to see whether you would benefit by going underground.

26-459 O - 83 - 12

The Group.

ABV, or Armerad Betong Vägförbättringar AB, of the Balken Group is one of Sweden's three largest civil engineering contractors. Turnover 1976 Skr 3,000 million (US$ 700 million). Established 1916/18, 10,000 employees.
Specialities: heavy construction, industrial plants, housing, underground construction, operation of crushing and asphalt plants.
Activities outside Scandinavia: Western and Eastern Europe, Middle East.
Address: S-112 88 Stockholm, Sweden. Telephone: +46 8 13 18 00. Telex: 11678 abv s.

Norway's leading tunnelling and offshore contractor. Turnover 1976 Nkr 600 million (US$ 120 million). Established 1896, 2,000 employees.
Specialities: harbour works, rockblasting and underground construction – have driven over 400 km of rock tunnels, 30 hydroelectric power stations and 1 million m³ of underground oil storage facilities. Designer and contractor (in JV) for Condeep offshore drilling and production platforms.
Activities outside Scandinavia: Poland, Iran, Saudi Arabia, Chile, Ecuador, Peru.
Address: Postboks 2592 Solli, Oslo 2, Norway. Telephone: +47 2 56 49 70. Telex: 18310 hecon n.

The name of the Orrje Group outside Scandinavia, one of Sweden's leading consulting groups, well-known internationally. Turnover 1976 Skr 130 million (US$ 30 million). Established 1947, 700 employees.
Specialities: engineering design and supervision of infrastructural and industrial projects, logistics; leading supplier of technology and engineering for underground facilities to Swedish military and civil authorities.
Activities outside Scandinavia in 16 countries, including Ireland, Scotland, Spain, Algeria, Libya, Tunisia, Burma, Philippines, India, Iran, Japan, Canada, Ecuador.
Address: Fack, S-102 60 Stockholm, Sweden. Telephone: +46 8 24 20 80. Telex 17496 consult s.

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300 CAMILLE AVENUE, P O BOX 278, DANVILLE, CA 94526
TELEPHONE (415) 837-3000 TELEX 336-641

RockTank® Group

is a Joint Venture of the above firms for the international marketing of underground oil storage installations.

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TankTrain™ Bulk Liquid Interconnected Tank Cars

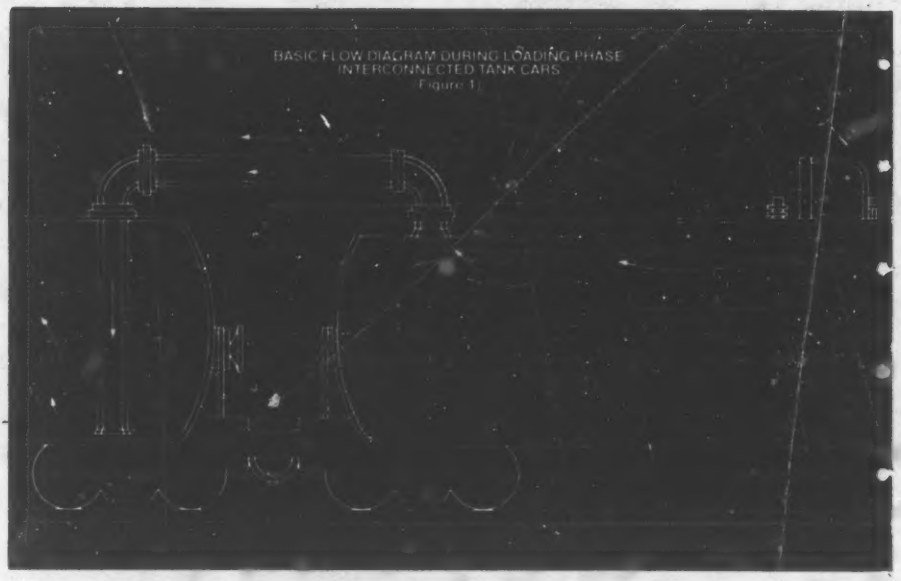
GATX has developed a tank car system for efficient loading, transporting and unloading of bulk liquids.

TankTrain cars can be made up into a string or strings of interconnected cars with each string being loaded or unloaded through a single connection.

Significant features of the TankTrain cars are shown in Figure 1 on the following page. Flexible hose, elbow pipes, protective housings and tank isolation valves are located at the top ends of each car. A string of tank cars can be loaded with liquid commodity through a connection to the first car. Displaced vapors may be easily collected from one connection at the end of a string to be processed through a flare or scrubbing equipment or piped to product storage.

At the unloading site, a reverse procedure can be used to unload an entire car string, using compressed air or inert gas, depending upon the flammability of the liquid involved. An unloading pump can be incorporated to increase the unloading flow rate.

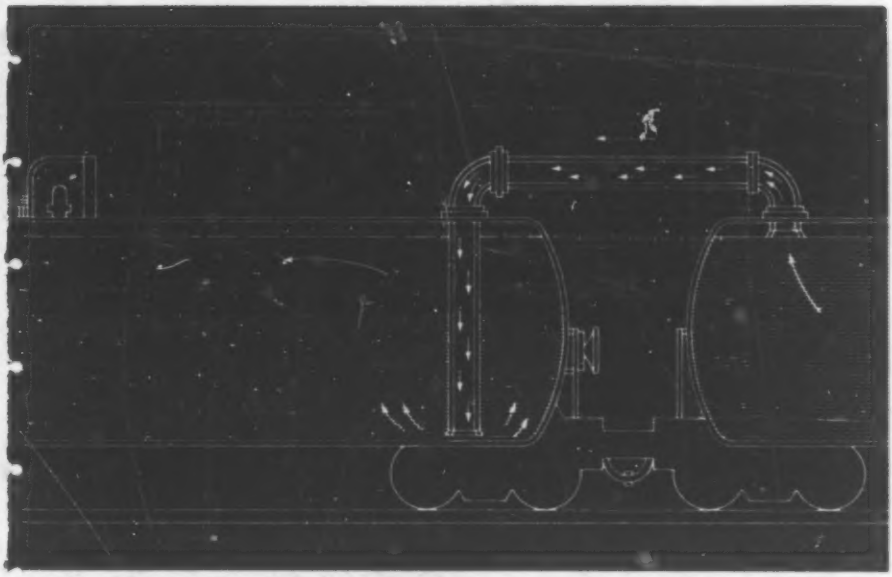
TankTrain cars are especially applicable to the transportation of train loads of crude oil and other liquid products, for which no other system of loading and unloading as efficient or safe, is currently available.



The Advantages of a system of TankTrain cars over loading and unloading of individual tank cars are:

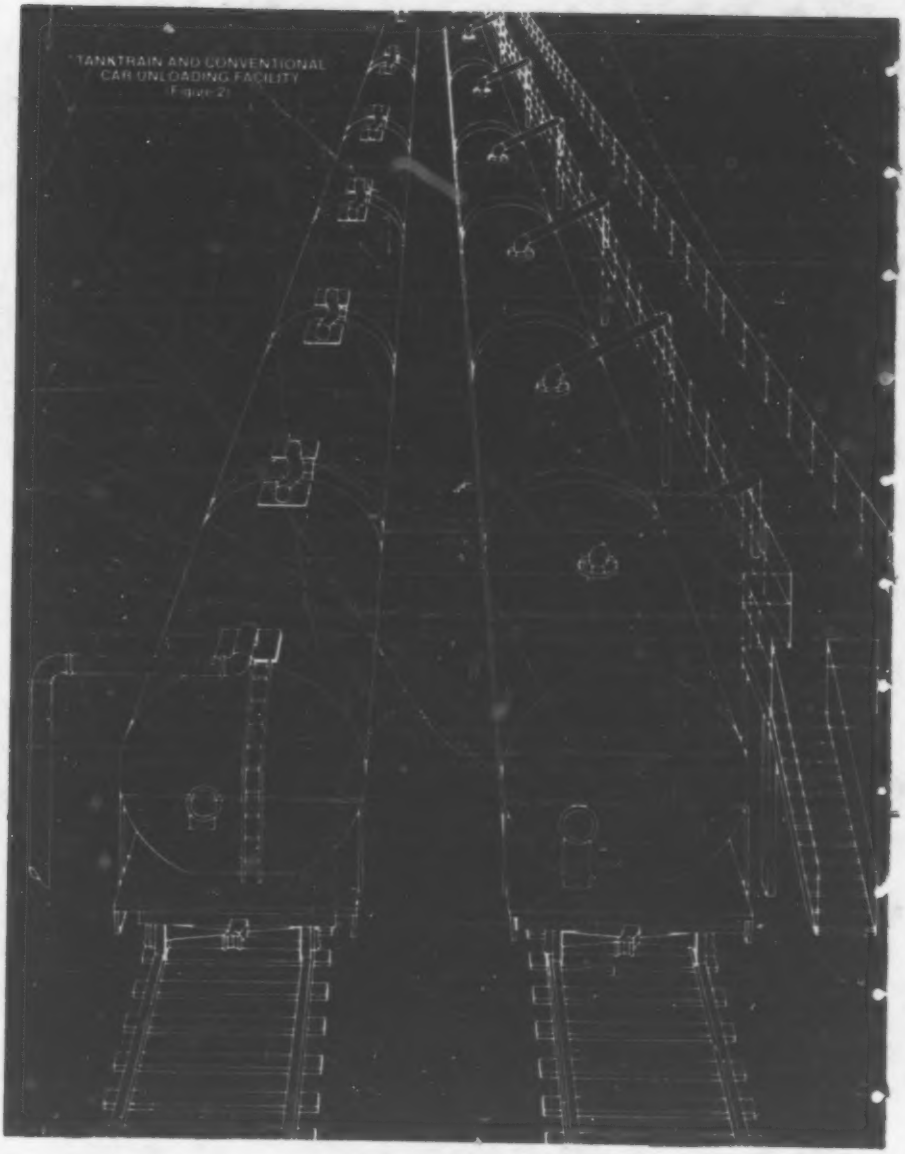
Less Handling. Loading and unloading are facilitated by only requiring a single product line connection for a string of tank cars.

Greater Flow Rates. With pumps and a source of compressed-gas, loading and unloading rates that average 3000 GPM for general petroleum products can be achieved for a typical 20 car TankTrain string.



Increased Safety. An extremely important feature is the greatly improved safety factor for personnel when using the TankTrain cars. The hazards created by climbing on cars, opening manways, handling fittings and exposure to commodity are greatly reduced or eliminated with the interconnected TankTrain cars.

Environmental Acceptability. The vapors, given off when some products are loaded through an open manway or gravity dumped into open pits, can be eliminated by making a single connection to a string of TankTrain tank cars.


TANKTRAIN AND CONVENTIONAL
CAR UNLOADING FACILITY
Figure 2

Minimum Capital Investment. Due to faster loading and unloading, fewer numbers of tank cars are required. Using the GATX interconnected tank cars eliminates expensive multiple position loading rack structure, loading arms, valves, piping, etc. (see Figure 2). Equally, at the unloading site, the interconnected cars eliminate the individual car unloading fittings and piping and the below-grade pits and complex system of pumps and piping required to simultaneously unload conventional tank cars.

Minimum Operating Labor. From the viewpoints of railroads, shippers and receivers, the TankTrain system requires minimal effort in positioning the tank cars, whether at the loading or unloading sites. Thus, quick turn-around times can be achieved leading to maximum utilization of equipment and operational staff.

GATX estimates that a 90-car unit train can be loaded by a 2-man crew within 5 hours from receipt of empty unit train to a full-unit train, inspected and ready-to-go. Unloading can also be accomplished within a 5-hour period.

Greater Market Penetration. With TankTrain cars, there is no requirement for elaborate and expensive rail facilities. TankTrain cars can be loaded and unloaded at terminals with minimum in-plant spur tracks. The system has flexibility. TankTrain cars can even be unloaded at "spot" locations without expensive in-plant equipment or services. Thus, from the shippers' and carriers' viewpoints, a load of fuel oil, for example, could be marketed to an industry or a public utility on a "spot" shipment basis, a trial evaluation basis, or even in an emergency energy situation.

The cars can also be routinely top-loaded and top or bottom-unloaded on an individual per-car basis—all leading to the maximum flexibility of operation and utilization of each car.

General Description

The basic flow pattern is as shown in Figure 1. Here liquid, having filled tank car A, is now filling tank car B and exhausting displaced vapors through tank car C. Note the automatically Controlled Outage in each tank car and the Isolation Valves on each car.

The concept of pumping a liquid through interconnected tank cars was first successfully tested in 1971 by GATX at its Sharon, Pennsylvania tank car facility. A flow rate of over 3000 GPM through a 10-inch diameter interconnection was achieved. TankTrain cars can be designed to handle most bulk liquids, including fuel oil, JP4, bunker C, alcohol, caustic soda, super phosphoric acid, ethylene glycol, sulfuric acid and others.

Systems. Two basic systems are envisioned which are capable of handling the entire range of viscosities and volatilities of petroleum products:

1. A closed system to handle products of relatively high volatility involving hazards of flammable or toxic vapors (see Figures 3 and 4).
2. A simplified system to handle products with low volatility and not involving a vapor hazard (see Figures 5 and 6).

LOADING "CLOSED SYSTEM"
Figure 3)
UNLOADING "CLOSED SYSTEM"
Figure 4)

LOADING SIMPLIFIED SYSTEM
UNLOADING SIMPLIFIED SYSTEM

Closed System. The facilities for loading and unloading TankTrain cars in a closed system are shown in Figures 3 and 4. A closed system is recommended for handling compounds with vapor hazards.

The loading system uses a pump (Figure 3) to provide the fluid pressure. Shutdown of the pump can be actuated by a fluid level sensing unit kept at the rack and placed in the last car. All displaced vapor, collected through only one connection per string of cars, is processed to the atmosphere through a flare or recycled to process storage. Each loading arm is fitted with a valve to prevent drip after being disconnected.

The unloading system in Figure 4 may require the use of inert gas, when handling flammable products. If an inert gas generator is used, as shown in Figure 4, the combustion gases are cooled and washed prior to being compressed and introduced into the train through end connections. Control is based on a timed interval. A predetermined number of cars will be pressurized to 60 psi before the timer activates the inert gas shut-off valve. Liquid pressure is established in the suction vessel and pumping rate is determined by the suction pressure available to the pump. Expansion of the gas in the pressurized cars will continue to supply the necessary pump suction requirements until all of the cars are empty. The pump will be shut off by a low liquid level indication in the suction vessel.

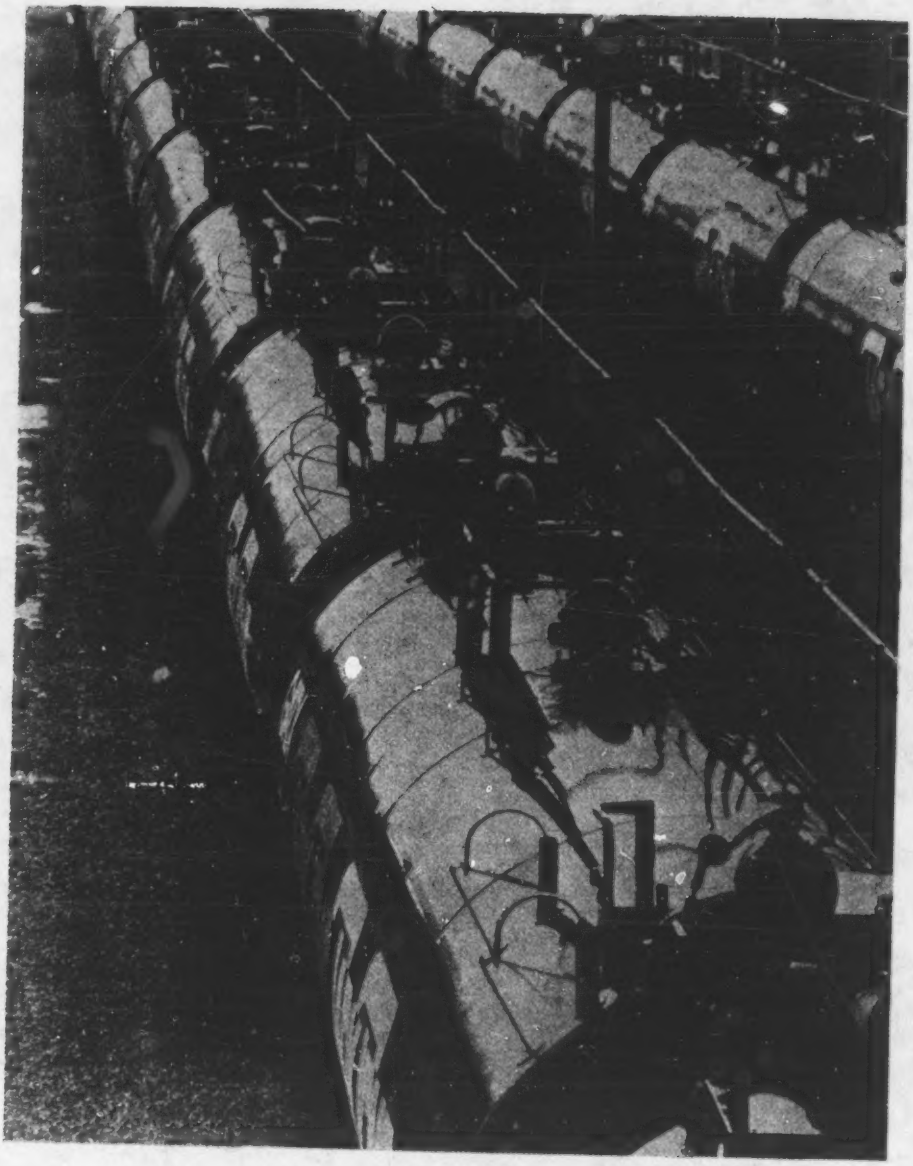
The system is designed to maintain an average flow rate of 3000 GPM for general petroleum products at a maximum pressure of 60 psig in the tank cars. Under these conditions, a string of 20 TankTrain cars can be loaded or unloaded with a single end connection. With a center point connection, 40 cars may be loaded simultaneously at this rate. Also, if the unit consists of 80 cars, two parallel strings of 40 cars may be loaded or unloaded simultaneously. If it is desired to reduce continuous track length, the number of parallel tracks can be increased to 4 so as to handle 4 strings of 20 cars.

Simplified System. The facilities for loading and unloading TankTrain cars in a simplified system are shown in Figures 5 and 6. The concept is applicable for handling petroleum products of low volatility such as #6 fuel oil.

As shown in Figure 5, a pump provides the motive force in loading. The pump cut-off point can be signalled by a sensing unit in the last car. Each loading arm (external hose connection) is fitted with a valve to prevent drip after being disconnected.

The unloading facilities as shown in Figure 6, are simpler than those for the closed system and compressed air can be used with nonflammable products to pressurize the cars. Car pressure is established by a pressure control valve. Pump start is based on a level established in the suction vessel pictured (Figure 6). Flow control is determined by suction pressure available to the pump. A predetermined number of cars will be pressurized to 60 psig before the timer activates the air line shut-off valve. Expansion of the charged air will continue to supply the necessary discharge pump requirements until all of the cars are empty. The flow from the pump will be restricted when a suction pressure level drop is sensed in the suction vessel and the pump will be shut off when a low liquid level is indicated.

The capital investment required for the facilities that make up this system are less than those required for the closed system. The time required for the sequences of operations in loading and unloading TankTrain cars is approximately the same for this system as for the closed system.



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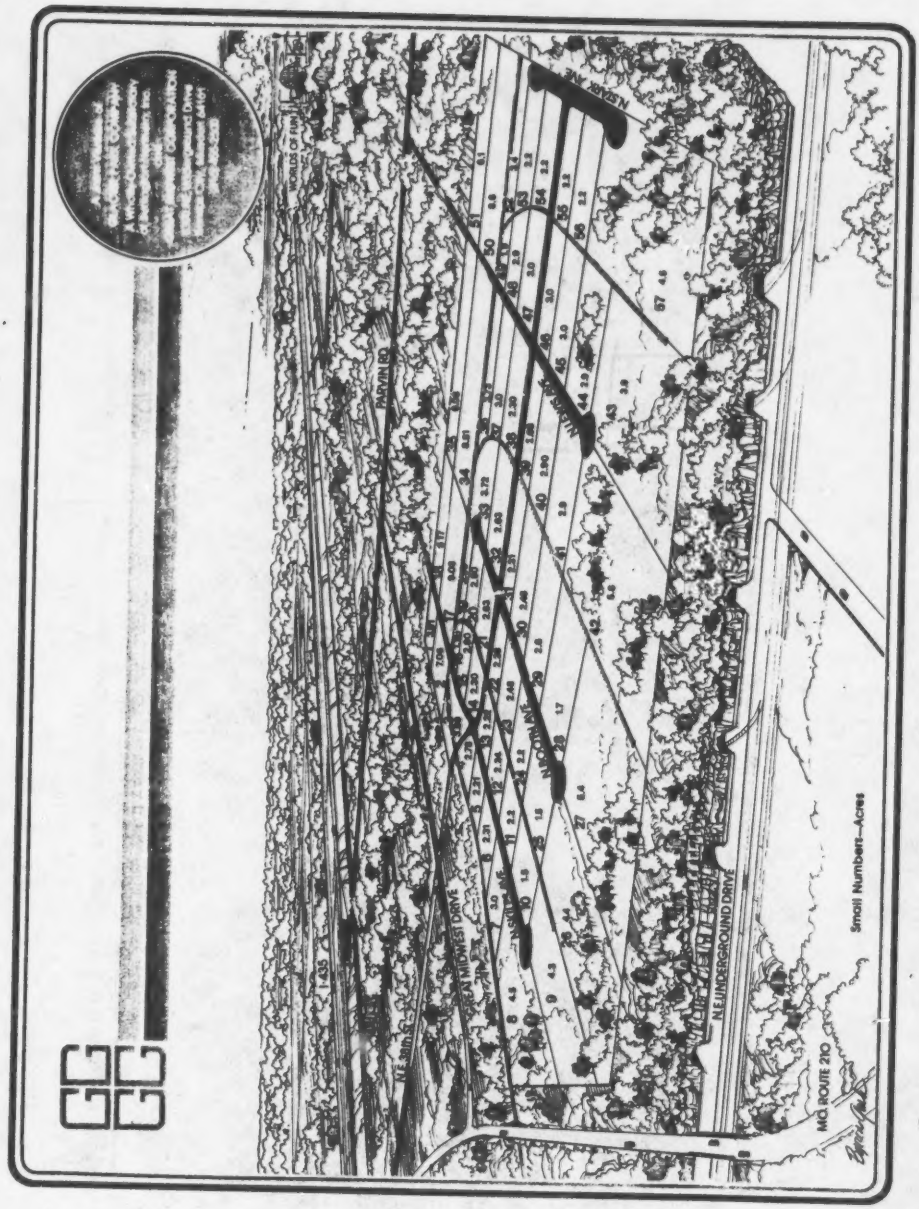
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KANSAS CITY INTERNATIONAL AIRPORT
DOWNTOWN AIRPORT
CENTRAL BUSINESS DISTRICT
NORTH KANSAS CITY
KANSAS CITY, MISSOURI
KANSAS CITY, KANSAS
INDEPENDENCE
LIBERTY
RAYTOWN
GREATER KANSAS CITY
OVERLAND PARK
PRAIRIE VILLAGE
OLATHE
GRANDVIEW
LEE'S SUMMIT
SHAWNEE
PARKVILLE
SITE
MISSOURI RIVER
KANSAS RIVER
KANSAS TURNPIKE
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MO. 291
MO. 291
MO. 291
MO. 210
MO. 152
MO. 9
MO. 7
MO. 150
MO. 350
MO. 10
MO. 58
MO. 50
MO. 71
MO. 150
MO. 291
MO. 7

Great Midwest Industrial Park

Location:
Within city limits of Kansas City (Clay County), Missouri.
7 Miles (11.3 KM) from Central Business District (10 Minutes).
19 Miles (30.6 KM) from Kansas City International Airport (23 Minutes).
At intersections of I-435 and Missouri 210 Highway (full interchange) and I-435 and Parvin Road (half interchange).

Zoning: Medium Heavy Industrial (Protective Covenants and restrictions are in force).

Rail: Served by Burlington Northern Railroad (within reciprocal switching limits).

Truck: Served by over 190 truck lines (within commercial zone).

Utilities:

	Size & Location	Supplier
GAS	3-inch line, all streets	Gas Service Company
WATER	12-inch line, Static pressure 84 psi, 70 psi residual	City of Kansas City
SEWER	8-inch main	City of Kansas City
ELECTRICITY	As required	Kansas City Power & Light
TELEPHONE	As required	Southwestern Bell

Fire Services:

Station	Distance
Station #34 4836 Brighton	3 Miles
Station #47 5130 Deramus	4.5 Miles
Station #6 2600 NE Parvin Road	3.7 Miles

Fire Insurance Class: 3

Security:
City of Kansas City Police Department
Frequent Great Midwest Security Patrols

Demographics:
Highway Traffic Counts (1981)

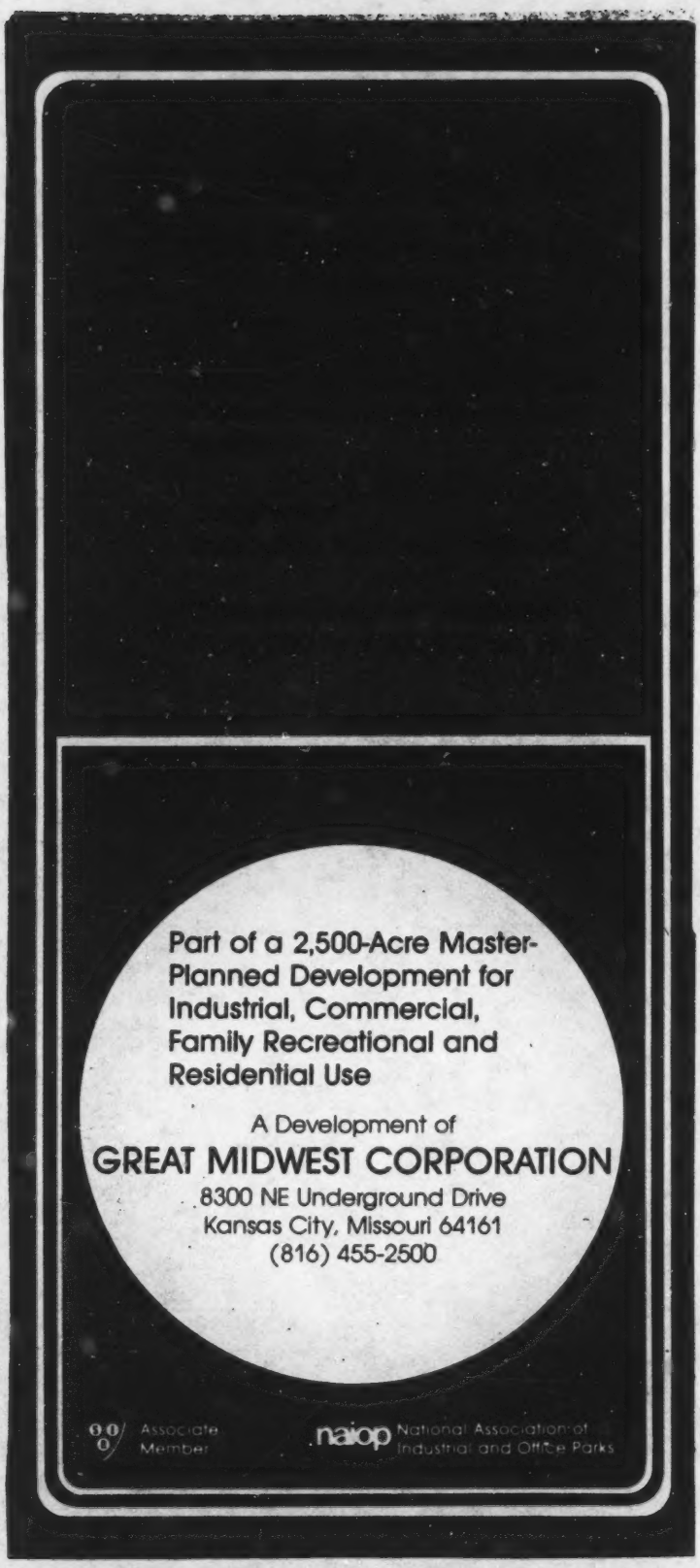
I-435; MO-210 to Parvin Road	23,370
I-435; South of MO-210	39,190

Source: Missouri State Highway Department

Population within Five-Mile Radius, 1980 Census

Total Population	118,944
Ages 20–54	57,252
Total Households	46,421
Total Housing Units	49,562

Source: Mid-America Regional Council


Part of a 2,500-Acre Master-Planned Development for Industrial, Commercial, Family Recreational and Residential Use
A Development of
GREAT MIDWEST CORPORATION
8300 NE Underground Drive
Kansas City, Missouri 64161
(816) 455-2500
Associate Member
naiop National Association of Industrial and Office Parks

CUTAWAY DRAWING OF SUBSURFACE
OFFICE, WAREHOUSE, AND
MANUFACTURING SPACE CREATED BY
LATERAL LIMESTONE MINING.

KANSAS CITY INTERNATIONAL AIRPORT
GG
GG
LOCATED IN THE DISTRIBUTION HUB OF THE NATION
KANSAS CITY, MISSOURI, WITHIN MINUTES OF
Downtown Kansas City (10 Min.)
Kansas City International Airport (20 Min.)
Kansas City Municipal Airport (10 Min.)
I-435 (1 Min.) • I-35 (5 Min.) • I-29 (10 Min.)
I-70 & Harry S. Truman Sports Complex (10 Min.)
TRUCKING:
Within Commercial Zones
193 Truck Lines Serve Kansas City
RAIL:
Served by Burlington Northern Railroad
LABOR:
Stable, Productive Work Force
FOREIGN TRADE ZONE:
Approved Foreign Trade Zone Site 15-2
UTILITIES:
GREATER KANSAS CITY
GREAT MIDWEST CORPORATION
Call Jim Wo
(816) 455-25

Energy-conserving, subsurface community for business industry.

The 460-acre underground portion of the real estate development of Great Midwest Corporation has been created from a large deposit of limestone 270 million years old. Twenty million square feet (1,858,000 square meters) of rock have been quarried by the room and pillar method, leaving pillars in essentially regular alignment to support the roof. The mining target is the 22½-foot ledge of Bethany Falls limestone underlying a large portion of Great Midwest's 2,200 acres of land. Only the lower 12½ feet of that vein, below a natural parting seam, is removed, providing smooth, natural ceilings, as well as a great deal of stability—10 feet of solid calcium carbonate (limestone). Ceiling heights of more than 12½ feet are achieved by lowering the floor level (e.g., roadways, rail and truck docks). Pillars bear only a fraction of their capacity and surface properties can be fully developed with no additional stress. Thus is created a road-level, dry, stable structure.

Why Locate Underground? A constant year-round temperature of 57 to 62 degrees Fahrenheit (14 to 17 degrees Celsius) means significantly lower utility costs. There is less demand for cooling and no demand for heat. Save up to 90% of your current total energy costs.

Insurance. The Underground is in the preferred risk category for inventory insurance.

Maintenance. Underground buildings are not subject to wear and tear from the elements and provide a corrosion free and rust free atmosphere.

Protection from the Elements. The Underground is protected from wind, rain, lightning, snow and ice storms and extreme temperatures.

Stability. Floor loads are virtually unlimited; heavy machines do not require extraordinary foundation construction, and vibration is at a minimum.

Security. Limited entrances and security patrols discourage criminal activities.

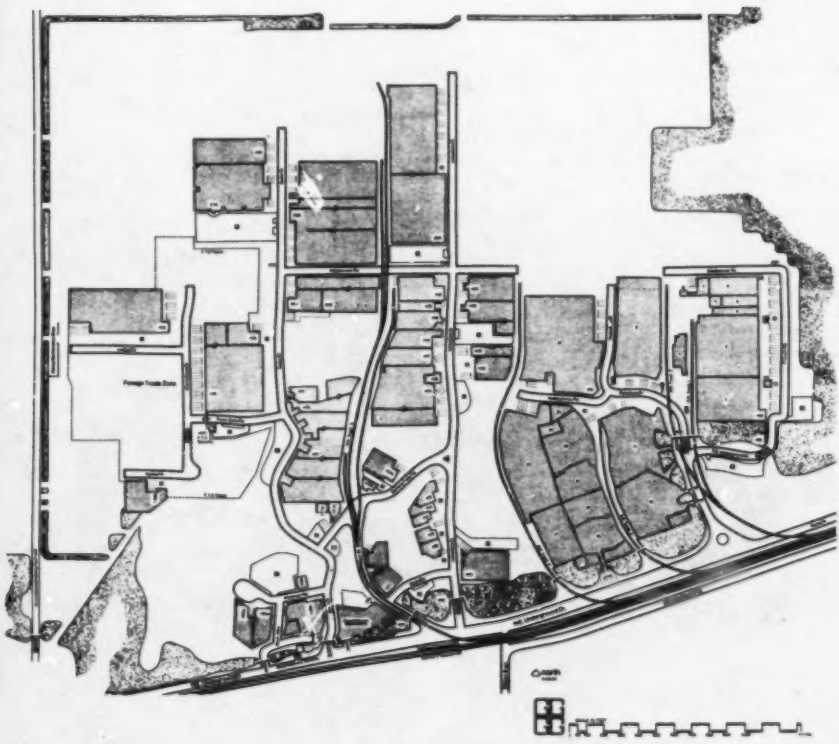
Other Savings. Machines retain accuracy for greater periods of time due to stability in temperature.

The entire facility is at road-level, completely dry, and boasts well-lighted, paved roads, truck and rail-dock facilities. Significant cost savings can be derived by locating in the Underground.

Great Midwest Underground offers ideal conditions for distribution, storage, assembly, manufacturing, and offices:

- Ceiling heights are 12 to 16 feet (4 to 5 meters).
- Buildings are custom designed and constructed in areas up to one million square feet (92,900 square meters).
- Lease rates are less than comparable surface structure rates (quoted on request).
- Weather-proof docks are constructed to accommodate the largest over-the-road trucks and containers.
- Burlington Northern rail service is available to selected sites (within the reciprocal switching limits).
- Security patrols operate on a 24-hour basis, and all fire sprinkler systems are monitored by a centralized computer.
- Utilities include complete water, electrical and sewer systems.
- Offices are custom designed to meet your specifications.
- Underground parking is provided for employees.
- Facilities are constructed to specification, including offices, employee parking, and individual requirements for temperature and humidity control.

Great Midwest Underground Map



Great Midwest Foreign-Trade Zone Site 15-2

Manufacturing and Distribution Savings Under Optimum Conditions

A Foreign-Trade Zone is a site where foreign and domestic materials are considered by the U.S. Customs Service to be in international commerce. This means that foreign or domestic goods may be brought into the Zone without formal customs entry or the payment of duty or excise and inventory tax.

Goods brought into a Zone may be stored, manipulated, mixed with domestic and/or foreign materials, used in assembly or manufacturing processes or exhibited for sale.

Merchandise shipped out of the Zone into U.S. Customs territory is subject to duty. No duty is charged on waste materials. U.S. Customs duties are not levied on goods shipped to foreign nations.

Great Midwest Corporation operates one of the largest Foreign-Trade Zone sites in the United States, with authority to develop 2.8 million square feet within the Great Midwest Underground, and 231 acres within the Great Midwest Industrial Park.

Foreign-Trade Zones offer many of the advantages of overseas plant locations without the risks of foreign investments. Zones enable business firms to take maximum advantage of the benefits of both domestic and foreign operations.

Available Services at the Great Midwest Foreign-Trade Zone

Public Warehousing & Distribution
- Breaking Bulk
- Containerization
- Shipment Consolidation

Packaging
- Order picking
- Product sorting
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Great Midwest Corporation

Land Development, Contracting, Mining, and Foreign-Trade Zone Operation

Great Midwest Corporation is a land development company and owner of Great Midwest Industrial Park, Great Midwest Mining Corp., Great Midwest Underground, and Universal Pipeline Constructors, Inc. It is the operator of Foreign-Trade Zone Site 15-2 located both underground and above ground in the Industrial Park and utilized by more than 100 companies.

Located just east of the intersection of Interstate 435 and Missouri Highway 210, Great Midwest was founded in 1969 when it purchased Midwest Pre Cote Company (now Great Midwest Mining) which had begun lateral underground mining of rock by the room and pillar method in 1945.

The rock has been removed by quarrying straight into long bluffs containing a 22½-foot-high ledge of Bethany Falls limestone. As a result, all roadways in the Underground are at the same level as the roads outside. Only the lower 12½ feet of the limestone vein have been removed, below a natural parting seam, to provide smooth, natural ceilings and strong support.

Massive pillars, 65 feet apart, support the 10-foot-thick rock ceiling 140 feet below the top of the bluff. Additional working height for the horisontal roadways and railroad sidings is created by removing shale from the mine floor, permitting trucks and railroad cars to be unloaded at the same level as the floor of the mine.

All roadways throughout the development are well lighted, clearly marked, two-way thoroughfares. Twenty million square feet (1,858,000 square meters) have been mined.

At the present time more than three million square feet of underground space has been created and houses some 100 companies who lease space there. Nearly 1,000 people are employed in the Underground where temperatures remain constant at 58° to 62° Fahrenheit (14° to 17° Celsius).

Great Midwest Underground has three and a half miles (5.63 Kilometers) of road and two miles (3.22 Kilometers) of railroad track which can accommodate 150 rail cars at any one time. Buildings have been constructed and leased for warehouse, manufacturing, commercial and office use.

Great Midwest Industrial Park, located directly above the Underground, is a joint venture of Great Midwest Corporation and Burlington Northern, Inc. Two hundred and thirty acres of rail-served land is being developed for sale.

Great Midwest Corporation is a privately-owned company based in Kansas City, Missouri, and is involved in the development of 2,200 acres (890 Hectares) of land located approximately seven miles from the central business district. Plans provide for industrial, office, commercial, recreational, and residential development of its properties.

STATEMENT OF RANDALL MONTGOMERY, PRESIDENT, SALTVILLE UNDERGROUND STORAGE CO., SALTVILLE, VA.

Mr. MONTGOMERY. Thank you, sir.

Having been an observer of the strategic petroleum reserve program since it first began, and having a background as an operator of fail-safe type of operations, we have constantly been somewhat surprised by the system engineering that has gone into the SPR program.

Certainly, we have no quarrel with a very large portion of it. And certainly, I want to hasten to add, and say that this administration's attitude has been immeasurably better han the attitude in the past.

We have made repeated applications to the SPR program through the years, and have not been successful until the services of you, Senator Warner, who have aided us in that program. Mr. Vaughan and Mr. Furiga came down, and we could not have asked for a more attentive and careful consideration.

We do want to hasten to add that our technical opinion is different than the technical staff of the DOE is to the competence, the environmental feasibility, the economic feasibility, and certainly the need. We would like to focus on that somewhat today.

The experts that we have here today, you will hear more from, and they are among the leading experts in the world, and have long years of experience in underground work. The president of the American Underground Space Association is with us. The Great Midwest Corp. has agreed to be the general partner, and is perhaps the largest underground store in America, and certainly one of the most complex.

The Norfolk Southern Railway has made extensive economic studies as to the transportation costs, and found them feasible. Prof. Carl Sherman has been an expert on east coast matters for many years. And our expert list goes on and on.

Mr. Magnus Bergman, who is chairman of the Rock Tank Conference in Sweden for 2 years in a row, where thousands of delegates from around the world came.

All of these experts in brief summary support Saltville's contention that this is the best facility available for east coast usage.

Some of the factors that we have brought to mind are what are some of the problems. And it comes to mind that it is a huge gigantic project. The volume of oil to be stored in a 750-billion-barrel program is equal to 330 Empire State Buildings.

Now, if you can imagine the engineering problems that would be involved in going down outside of Houston, and digging in these caverns, and washing a volume equal to 330 Empire State Buildings. And then the Empire State Buildings would be buried at 4,000 feet. Then the problems of moving that oil to the markets in a timely manner in the event of a friendly embargo, much less an unfriendly embargo around the straits of Florida where you can see the lights of Havana.

Senator WARNER. I must go to the floor of the Senate now, and vote again. But I am going to ask the counsel for the subcommittee, if it is agreeable to you, Governor, to continue the presentation of your case and testimony.

Would that be agreeable?

Governor DALTON. Yes.

Senator WARNER. That way we can continue on, and I will return as soon as I can take leave from the floor.

Governor DALTON. If it suits you, we would be agreeable to wait until you got back.

Senator WARNER. All right, sir.

[Whereupon, a short recess was taken.]

Senator WARNER. Thank you, Governor.

Mr. MONTGOMERY. One other measure of the magnitude of the program is the fact that the Fortune 500 companies this past year, their total net profits was $61 billion as compared to the budgeted sum, if we pick the number $40 billion. So it is gigantic program.

Certainly, there have been problems, and certainly there has been a learning curve. But the thing of taking the massive numbers for the United States as a whole, and putting all of these strategic reserves on the gulf coast, we think we have a better alternative.

Some of the comments that the DOE had is that the imports is the swing fuel for the United States. The fact that imported oil is the swing fuel for the United States, and that it is relatively insignificant, that is true. But whenever you begin to talk about the east coast, it is 100 percent of the supply.

Whereas all the refineries on the midcontinent and in the Gulf Coast States area, imports only represent 25 percent of the current refinery production for those refineries in the United States.

So our position is in the event of an embargo, the east coast are the first ones that are going to suffer. The gulf coast and the midcontinent refineries can survive at a reduced rate, true. But it will only be 75 percent. The east coast is 100 percent.

The other factor that we would like to point out to you is that the current deliverability of the strategic petroleum reserve is 1,700,000 barrels a day. Refining capacity for the east coast refineries is 1,700,000 a day. Therefore, based on that, the 100-percent imports is a very strong argument that 100 percent of the current deliverability of the SPR program should be on the east coast.

We have in Virginia an existing warehouse that can be made available on a very rapid basis provided it was on a fast track concept. We believe that we can store the oil at known prices at known transportation costs at a cost less than what can be acquired from the gulf coast salt domes. We will have more about that from other people later.

I failed to mention Dillingham a little earlier, Governor, when we were talking about the expertise. But Mr. Baker here represents Dillingham, and they were involved in the construction of the very first site of underground storage in the world which is in Hawaii back before the 1940's. And again, we have that long term of construction experience.

I think that that covers most of the points that I had.

Governor DALTON. Mr. Chairman, I would like to recognize Mr. Donald R. Woodard, the vice president for planning and development for the Great Midwest Corp., and president of the American Underground Space Association.

Senator WARNER. We welcome you.

STATEMENT OF DONALD R. WOODARD, VICE PRESIDENT FOR PLANNING AND DEVELOPMENT, GREAT MIDWEST CORP., AND PRESIDENT, AMERICAN UNDERGROUND SPACE ASSOCIATION

Mr. WOODARD. Thank you, Mr. Chairman.

My background has been in city and regional planning. I served as planning director for the city of Kansas City, and director of planning for the State of Missouri. I abandoned this career in the early seventies, because I saw an opportunity in underground development that to me just had not been looked into on a national scale, or at least in utilizing this as an alternative to surface development.

In Kansas City, we have been very successful in pioneering in underground storage and underground development. We have confronted issues that have permitted us to be successful in this. We realized that conventional development rules and regulations did not apply to undergrounds.

We addressed ourselves to zoning, building codes, safety programs, energy consumption, fire protection insurance. And I think that we have demonstrated to the world that underground storage is a viable alternative to surface development, in that it has been done by the private sector.

And this is the reason that we are interested in this proposal. We were approached by Mr. Montgomery some time in the past. We have studied it, analyzed the impact of such a storage facility in the Saltville area. It is our opinion that it is viable. It is our opinion that the structure has all of the characteristics that are required for the storage of oil.

We are convinced that the logistics can be worked out to deliver the oil to the market. That we can work out the logistics of delivering the oil to the underground storage in Saltville. And it was kind of interesting to note that Senator Matsunaga, from Hawaii, indicated a statistic of the distance from Washington to Istanbul as being important.

I think that that kind of statistic is kind of demonstrative of distance or size. And we have done some statistical analysis such as that ourselves. Randall alluded to over 300 Empire State Buildings.

The underground at Saltville would be approximately 3¼ times as large in volume as the Pentagon here in Washington, D.C.

Just to indicate the size of this facility in the Saltville area, it would be 3¼ times the size of the Pentagon, if the Pentagon was a vessel that contained wood.

It would be the equivalent of 10 Empire State Buildings at 1 location, or 116 times the capacity of the Washington Monument.

I think that altogether that volume would represent 12.5 times the daily capacity of all of the 17 refineries on the east coast.

It would also be the equivalent of roughly 3 percent of the entire strategic petroleum reserve. We believe that the underground at Saltville to be sizable enough to be significant to the SPR.

Thank you.

Governor DALTON. I am going to ask Mr. Magnus Bergman of ITASCA, also representing Rock Tank—Rock Tank is a major designer of hard rock underground oil storage facilities around the world, and Mr. Bergman is also the foreign editor of the American Underground Space Association Journal.

STATEMENT OF MAGNUS BERGMAN, OF ITASCA, REPRESENTING ROCK TANK

Mr. BERGMAN. Thank you, Mr. Chairman, for the opportunity to express our professional opinion of the technical feasibility of the—mine oil storage facility.

I have about 15 years' experience with the international development of underground oil storage project in different parts of the world, mainly in Scandinavia, where I am born. I moved to this country 2 years ago to form ITASCA Consulting Group with some American friends of mine in Minnesota.

I have been Secretary for two international conferences in Sweden, the last one hosted by the Swedish Government, that was focusing to a major part of oil and gas storage underground.

I am currently involved as consultant to the United Nations to develop an underground policy for the U.N. and when they have their meeting this summer of the U.N. Committee on Natural Resources.

This is just background for placing myself in relation to the technical expertise we are having in our company.

In our judgment, it is—our judgment is that the mine oil storage project is a very feasible project, from stability point of view and from the hydrological point of view, which is the main concern of the area that we are working with.

We believe that there will be some questions regarding the design, but these questions cannot be revealed until we start to empty, pump out the water, and this design criteria will be determined in the final design that will be the result of this. From the available data, it can be determined that it is a very—from the economical point of view, it is a very interesting project to pursue.

Thank you.

Senator WARNER. Thank you very much for joining us.

Governor DALTON. The next portion I would like to introduce to you is Mr. Douglas Baker, the vice president of Dillingham Construction, Inc. This is a constructor-engineer of major underground facilities including the Washington Metro Subway System, Chicago Water Disposal System.

Mr. Baker is a part of our team as well, Mr. Chairman.

Mr. BAKER. Right

Senator WARNER. We welcome you, Mr. Baker.

STATEMENT OF DOUGLAS BAKER, VICE PRESIDENT, DILLINGHAM CONSTRUCTION, INC.

Mr. BAKER. Thank you, Mr. Chairman. It is a pleasure to be here.

In addition to activities in maritime and energy, Dillingham has a large international construction activity.

As Governor Dalton mentioned, we were continuously involved in construction on the Metro here since the late sixties, and our last project entailed three cavern-like stations under Connecticut Avenue, Zoo Park, Cleveland Park and Van Ness.

Currently, we are finishing a complete underground complex in the Sierras for P. G. Nee, which just has gone on line. It is called Kirkoff II, and the power generation there will help our energy problems.

The firehouse and all the tunnel work is underground there, and those are a few of the highlights of our underground capabilities which I assure you are extensive.

Six years ago, we entered into a contractual agreement with three Scandinavian firms, which Magnus represents, and we call that Rock Tank USA; and it is a group of Dillingham, ABV, Hoyer Ellefsen, and Scandiaconsult.

And this contractual relationship is ongoing. We represent this group in the United States for any cavern-type construction.

We enthusiastically support Mr. Bergman's conclusions. What Don Woodard told you about the viability of this project, we are eagerly looking forward to participating in.

Senator WARNER. Thank you. Thank you very much.

Governor DALTON. I would like to ask Mr. Brady Anderson of the Norfolk Southern Corp. to say a few words. Mr. Anderson represents the railroad that would be involved in the project.

Senator WARNER. Could we allow Mr. Anderson to use that double-wire mike? Thank you.

STATEMENT OF BRADY ANDERSON, NORFOLK SOUTHERN CORP.

Mr. ANDERSON. Thank you, Mr. Chairman.

The Norfolk Southern Corp., which is a holding company for two of the most important railroads in the Nation—Norfolk & Western Railway, and the Southern Railway System—believes that the concept presented here by the Saltville Underground Storage Co. is a viable concept and is economically competitive in today's market.

We also believe that this is a sound proposal and would require no new technology to implement this proposal.

We have at present a first-class rail line that runs between Port of Norfolk and Saltville, Va. There would be some new construction required to unload and load the salt at Saltville, but this cost has been taken into account, in our cost calculations.

Secretary Vaughan earlier brought up an objection regarding the rail transportation happening to be 300 miles——

Senator WARNER. Could I interrupt you to clarify?

You described the rail line now serving Saltville as being in what category?

Mr. ANDERSON. A first-class rail line.

Senator WARNER. But those that are not familiar with that terminology—in the old days, it used to be main lines, and spur lines and——

Mr. ANDERSON. OK we have a main line into Chilhowie, which runs from Norfolk. It is a branch line that runs up to Saltville, Va.

Senator WARNER. That is the point I wanted to make.

Mr. ANDERSON. Our engineering department has taken looks into that branch line if it needs to be used, and we are prepared to work with that branch line also.

Senator WARNER. If necessary, augment it.

Mr. ANDERSON. Yes, sir.

Senator WARNER. And what is the distance, then, from Chilhowie up to the terminus that would be used for loading and offloading?

Mr. ANDERSON. Five miles.

Senator WARNER. So, it is a very simple engineering problem, as well as cost problem.

Mr. ANDERSON. The main line that runs between Roanoke and Bristol, Va., is the line that runs through Chilhowie, so I am quite familiar with it.

Governor Dalton and I have gone up and down that area many a time.

Senator WARNER. Thank you.

Mr. ANDERSON. As I was saying, Secretary Vaughan brought up an objection to the oil having to be transported by rail 300 miles, either out of or to the Port of Norfolk.

As you know, the Norfolk & Western has extensive experience in moving heavy tonnages through this area, and we believe that we can efficiently and economically move this tonnage as proposed by this proposal.

The concept of unit-trained transportation, as proposed, using a tank-trained concept as developed by the GATX Corp. is proven and is being presently used in today's market.

One of the exhibits that we have with the brochure is an exhibit of Shell Oil, using the tank-trained concept on the west coast.

Senator WARNER. You are using it on coal, now, aren't you?

Mr. ANDERSON. Yes, sir.

As we say, we support this concept, and look forward——

Senator WARNER. In other words, the question was raised by the Secretary about the transportation and, Governor, I judge you have looked into that, and you can meet the criteria established by the Department of Energy for purposes of transportation and rail being the primary——

Governor DALTON. Mr. Chairman, if you will examine the information that we have prefiled, you will see a brochure that explains the unit-trained concept of these tank cars, and how you can fill the front tank car, and it just keeps going until you fill the back. You don't have to fill each individual tank car. It is just like a moving pipeline, so to speak.

And this is being used in several places in this country today, and the cars are already in use in several places. I have seen a film on it. It is very convincing.

We have Mr. Carl Sherman with us, who is a professor at the Petroleum Engineering School at Penn State University and is an expert on the east coast energy matters, but in thinking about time, Mr. Sherman will not be testifying.

The last witness we have——

Senator WARNER. We would be delighted to hear from him if you want to have him speak for the record.

VOICE. It would be redundant.

Governor DALTON. He says it would be redundant. We just want you to know that he is also a part of this team, and we brought him to show the committee and to show the Energy Department that this is not just a fly-by-night operation that we are talking about out there. We have got the leading experts in the world, we think, associated with the project, and the cap of it I want you to hear Mr. Forrest

R. Browne, who is the president of Great Midwest Corp., and Great Midwest is the managing partner and an operator of major underground storage facilities, and I am going to ask him to tell you a little bit about what he has done in Kansas City, and then to tell you what might be worked out with the Federal Government to let private enterprise get in and show what private enterprise can do as well as Government can do.

Senator WARNER. Thank you, Governor.

Mr. BROWNE. Thank you, Governor.

STATEMENT OF FORREST R. BROWNE, PRESIDENT, GREAT MIDWEST CORP.

Mr. BROWNE. We have, in the last 5 or 6 years, in Kansas City in a hardrock limestone mine, similar in many ways to the existing limestone mine in Saltville, Va., begun conversion for a large-type storage activities.

And you might be interested to know in the last years, we have completed two facilities under long term lease to the U.S. Postal Service, to move operations from this Washington, D.C. area to Kansas City underground.

We have completed 57 buildings, averaging 140 feet under the ground in this hard rock mine. We are taking a look at other such mines in the United States.

While the bulk oil storage would be a different kind of a commodity, we believe that the history of such storage in the Scandinavian countries that we have examined very closely in the last 6 months, as we have been intensely involved in this project, demonstrates both the cost effectiveness and the overall technical feasibility.

We, while not disagreeing with the approach that has been followed by the Federal Government in the past, suggests that there might be room for private involvement, private financing on a cost-competitive basis, this program in the future.

Specifically, we have identified five areas of risk, and a good part of my job is to evaluate risk before we put our scarce investment dollars into new projects.

We evaluated the technology feasibility—will this mine hold the oil? And our conclusion, primarily, is, yes, it will.

Second, we have examined the transportation feasibility and the risk of can we get the petroleum in in the timeframe and the cost considerations required and get it out on a timely basis; and we are prepared to assume that risk.

The third risk of the environmental nature. Will we pollute the environment in the process of doing it? Have we satisfied ourselves that precautions can be taken there that will be satisfactory to the Department of Energy?

Finally, the economic feasibility, and this is the area where we think that the risks to ourselves and to the Federal Government is minimal. That is, we see an opportunity to come at a cost of, competitive with, and hopefully substantially less than what the Federal Government is doing now through their own efforts in Louisiana and Texas.

There is a final kind of a risk, however, Mr. Senator, that we cannot assume, and that is the political risk. We cannot continue with this project and invest hundreds of thousands of dollars of our scarce investment resources without some assurances if we are able to put this project together, that there would be a good faith negotiation of an agreement by the Department of Energy.

Put another way, sir, we are at a point where we need either to move forward with this and be encouraged—again, in a good faith manner; we don't want to be invited to spend several millions of dollars now, because the price begins to escalate here at a certain point when we move from 95 percent certain that it will work to 99.9 percent certain. The cost gets very, very high, and we certainly wouldn't want to get into that kind of a situation without a feeling that if we delivered the goods, in fact, there would be a contract or an arrangement possible.

We have three kinds of proposals that we would be prepared to put forward. One would be a complete turnkey proposal whereby we would deliver the physical facility, ready to accept the oil, ready to be leased to the user privately financed.

The second possibility would be to expand that turnkey proposal to include the acquisition of the oil on the world markets. We think we could do a job equal to and probably superior to the Federal Government in that regard.

Third, we would have the possibility of delivering not only the physical facility, but the oil acquired on the world markets and also include private financing of not only the facility, the transportation network, but the oil itself.

So, to the extent that here were budgetary constraints facing the Department of Energy—and that seems to be the gist of the testimony that we heard earlier this morning—we would be prepared as a private consortium, to speak to those, and hopefully to do it, and at a cost that would be competitive to what the Government is spending by acquiring and financing their own operations.

That summarizes in a nutshell. We have walked through very quickly, but we wanted to give you a flavor, not only of our seriousness, but our flexibility in a direction that might be appropriate.

Thank you.

Senator WARNER. Governor, as you know, we heard earlier from the Secretary, Assistant Secretary from the Department of Energy, and I would hope that at some point of your presentation you would address those questions—those reservations that he had, and that I take as being thus far a disinclination on the part of the Department of Energy to accept your proposal.

Governor DALTON. We have not received any encouragement at this point from the Department of Energy as to encourage us to go forward with the project.

We have private investors that are willing to take a risk, as you have heard here today, and——

Senator WARNER. It would be a savings to the Government.

Governor DALTON. It would be a savings to the Government. There is a cavity already carved out there in Virginia that would hold 21.5

million barrels of oil and not 1 ounce of dynamite would need to be spent to build that as it is in place today.

It just doesn't make any sense at all to say that this Nation has that kind of storage available underground, and does not want to use it.

We don't understand it quite frankly.

Senator WARNER. Well, now, the members of this committee are quite anxious to look into the question of saving money for the Government. As a matter of fact, the reason that I have left you time and time again today is an effort to participate in the structuring of a budget, to be provided by the Senate.

Now, you saw the cost figures here—I think $360——

Governor DALTON. That is for interim storage.

Senator WARNER. Are you at liberty to address that figure in the context, generally speaking, as to what you might be able to do?

Governor DALTON. I'll let either—the gentleman beside me——

Senator WARNER. This will not be binding upon you, but I mean would you be willing to say that you can come in lower than that, considerably lower?

Mr. MONTGOMERY. Yes, Senator, considerably lower, and the Department of Energy has figures—or bases on solid engineering estimates of a few years ago.

Of course, one of the things that the Department of Energy has never included, and that is the one thing that makes this a highway. Their transportation is many times less expensive.

Instead of having—we can serve somethere around 30—as I recall, it is about 37 tanker days.

Senator WARNER. Well, Governor, this indeed is an interesting proposal. Both you and I were heavily involved when we observed some 70 ships swinging at anchor at Norfolk, trying to unload in Virginia.

We have seen a lot of cycles in our energy, problems—it involved our State. And here is an offer by the State of Virginia to provide a reserve of oil for not only Virginians but those in the environment in Virginia.

I would say in the Appalachia region would be some of the primary areas of America to be serviced by this, if it in fact it had to be discharged some day.

Do you have any recommendations to the committee, as to how the members of the committee could be of assistance to you or your colleagues in this project?

Governor DALTON. Mr. Chairman. If the committee looks with favor on the project, I would think that there must be some way out of that. I know how we do it in State Government—we write amendments to the budget bill, and tie-in that so much must be spent in a certain area for a program; and I can't help but think that you must have ways of doing that at the Federal Government as well.

Senator WARNER. Yes, and you noticed today that GAO coming in and taking some of the money that we had provided for the DOE and they hadn't spent it. You were present when that occurred.

Governor DALTON. I heard this.

Senator WARNER. This is, as I said in my opening statement, a pull and tug situation. I will look into this. I am just wondering now while you have got this team assembled here in the Nation's Capital, whether

or not the Department of Energy could accord you a brief hearing this afternoon——

Governor DALTON. If we could sit down and talk to the principals at the Department of Energy while we are here, if your good office could assist us in that endeavor, we would be delighted to stay awhile and go over and let the top people over there hear exactly what we told you, because, quite frankly, when we have been here before, it has been just Mr. Montgomery and me, and the Norfolk Southern, so to speak.

So, we have brought in what I think you will agree today is probably as great an expertise as there is in the world for this type of thing.

Senator WARNER. Governor, let's see what we can do. I will be glad to make a telephone call when I adjourn this hearing.

Do you have anything further to be brought forward in this hearing?

[No response.]

Senator WARNER. If not, the hearing is adjourned, and I thank you.

Governor DALTON. Thank you so much.

[Whereupon, at 1:58 p.m., the hearing was adjourned.]

APPENDIX

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

INDEPENDENT FUEL TERMINAL OPERATORS ASSOCIATION

SUITE 300
1700 PENNSYLVANIA AVENUE, N. W.
WASHINGTON, D. C. 20006

PRESIDENT:
LEONARD P. STEUART, II
STEUART PETROLEUM COMPANY
WASHINGTON, D. C.

VICE PRESIDENTS:
JOHN A. KAMES
NORTHEAST PETROLEUM INDUSTRIES, INC.
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WILLIAM F. KENNY, JR.
MERRAN OIL CO., INC.
NEW YORK, NEW YORK

SECRETARY-TREASURER:
ROBERT H. DEMERE
COLONIAL OIL INDUSTRIES, INC.
SAVANNAH, GEORGIA

EXECUTIVE COMMITTEE:
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PITTSTON PETROLEUM INC.
NEW YORK, NEW YORK

ROBERT P. MCGRAJTY
THE SICO COMPANY
WILMINGTON, DELAWARE

May 5, 1983

The Honorable John W. Warner, Chairman
Subcommittee on Energy and Mineral Resources
Committee on Energy and Natural Resources
United States Senate
SD-306 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Mr. Chairman:

On May 6 your Subcommittee will hold an oversight hearing on the Strategic Petroleum Reserve ("SPR") to review the Administration's proposal to fill the SPR at a rate of 145,000 b/d in FY 1984 and at 100,000 b/d in FY 1985. The Independent Fuel Terminal Operators Association ("IFTOA")1/ shares the concern of many in Congress that this proposal does not comply with Section 4 of the Energy Emergency Preparedness Act of 1982 (P.L. 97-229) which requires a minimum fill-rate of 220,000 b/d.

In a recent letter to Congressman William E. Dannemeyer (R-Calif.), Secretary of Energy Donald Paul Hodel expressed the Administration's opposition to a higher fill-rate because of budgetary restraints and because it would necessitate the use of interim storage. Secretary Hodel characterizes the use of interim storage as a needless increase in the cost of the SPR. He stated:

> I am informed it will cost from $1 to $5 per barrel per year to store crude oil in interim storage. This interim storage cost, which is estimated at an average of about $3.60 per barrel, more than offsets the decline in world oil prices we have experienced within the last several months. Moreover, I am advised that interim storage presents various management problems, such as those involving security of and accountability for oil stored in non-permanent facilities, which prudence dictates be avoided.2/

(Emphasis in the original)

We are disturbed by the letter because his analysis of interim storage is incorrect and the concerns he has raised are unfounded.

First, there is currently a surplus of crude oil on the world oil market. Congress recognized this fact and mandated that the DOE take advantage of the surplus when it established the fill-rate of the SPR at 300,000 b/d in the Energy Emergency Preparedness Act.

Second, Congress also recognized that a fill-rate between 220,000 b/d and 300,000 b/d would require the use of interim storage and thus authorized up to 10% of the SPR funds to defray those costs. Accordingly, Congress, fully aware of budgetary restraints, examined the cost of interim storage and made the judgment that it was fiscally prudent to buy large volumes of crude oil in this depressed market and incur some additional costs for interim storage. DOE should not now be permitted to take action contrary to that judgment of Congress.

Third, Secretary Hodel states that annual storage costs are estimated at $3.60 per barrel. We have difficulty understanding the basis for this figure. In March 1982 our Association testified before your Subcommittee and the House Subcommittee on Fossil and Synthetic Fuels on this subject.3/ We estimated at that time that our members could offer DOE storage at a rate of $1.50 to $2.50 per barrel. In December 1982 we submitted updated information to the Department and stated that storage could be offered at $1 to $1.50 per barrel.4/

At the March 1982 hearings the Transportation Institute testified that storage could be made available in tankers at about $3 per barrel.5/ Also at the March hearings the Saltville Underground Storage Company testified that storage was available at 50 cents per barrel.6/ In light of these statements we cannot understand how DOE can estimate that use of existing storage facilities would cost as much as $3.60 per barrel.

In addition, since prices of world crude oil have fallen by about $6 per barrel, even a cost of $3.60 per barrel would not "more than offset the decline in world oil prices."

Fourth, interim storage would not pose significant security problems. In fact, strategic placement of storage

in areas outside of the Gulf Coast would reduce the risk of disaster resulting from sabotage or accident. Moreover, accountability problems for acquisition and retention of oil are generally the same at a salt dome on the Gulf Coast or at a tank farm in Virginia.

Accordingly, the Independent Fuel Terminal Operators Association urges the Subcommittee to question Assistant Secretary William Vaughan about the letter from Secretary Hodel, specifically the statements about the cost and use of interim storage.

Respectfully submitted,

Leonard P. Steuart, II
President

Attachment

1/ IFTOA is an association composed of 16 companies which operate deepwater oil terminals along the East Coast from Maine to Florida. None is affiliated with a major oil company. Members are primarily marketers of residual fuel oils (Nos. 4, 5 and 6 fuels) and home heating oil (No. 2 fuel); several companies also market significant volumes of gasoline at wholesale and retail levels. Members handle nearly 50% of the non-utility residual fuel oil shipped to the East Coast, nearly 60% of the non-utility residual fuel oil shipped to New England, 25% of the No. 2 heating oil shipped to the East Coast, and more than 50% of the No. 2 heating oil shipped to New England. A list of members and a more detailed description of the Association is attached. (Attachment A).

2/ Letter to Congressman William E. Dannemeyer from Secretary of Energy Donald Paul Hodel (April 26, 1983) at 2.

3/ See Statement of the Independent Fuel Terminal Operators Association on "Alternative Storage Proposals for the Strategic Petroleum Reserve" before the Subcommittee on Energy and Mineral Resources, Committee on Energy and Natural Resources, United States Senate, Washington, D.C. (March 25, 1982); Statement of the Independent Fuel Terminal Operators Association on "Alternative Storage Proposals for the Strategic Petroleum Reserve" before the Subcommittee on Fossil and Synthetic Fuels, Committee on Energy and Commerce, United States House of Representatives, Washington, D.C. (March 2, 1982).

4/ Comments of the Independent Fuel Terminal Operators Association on Regional Petroleum Reserves submitted to the Department of Energy December 3, 1982, at 13.

5/ Statement of Peter Luciano, Executive Director, Transportation Institute, before the House Committee on Energy and Commerce, Subcommittee on Fossil and Synthetic Fuels (March 2, 1982).

6/ Saltville Underground Storage Company Statement to the Senate Committee on Energy and Natural Resources (March 25, 1982).

ATTACHMENT A

MEMBERS

INDEPENDENT FUEL TERMINAL OPERATORS ASSOCIATION

Astroline Corporation
Saugus, Massachusetts

Belcher Oil Company
Miami, Florida

Bray Terminals, Inc.
Albany, New York

Colonial Oil Industries, Inc.
Savannah, Georgia

Eastern Seaboard
Petroleum Co.. Inc.
Jacksonville, Florida

Global Petroleum Corp.
Dedham, Massachusetts

Meenan Oil Co.. Inc.
New York, New York

Northeast Petroleum
Industries, Inc.
Chelsea, Massachusetts

Northville Industries Corp.
Melville, New York

Pittston Petroleum, Inc.
Montvale, New Jersey

Quinoil Industries, Inc.
Quincy, Massachusetts

C.H. Sprague & Son Company
Boston, Massachusetts

Steuart Petroleum Company
Piney Point, Maryland

Swann Oil, Inc.
Bala Cynwyd, Pennsylvania

Webber Tanks, Inc.
Bucksport, Maine

Wyatt, Inc.
New Haven, Connecticut

The 16 companies listed above own and control terminals capable of receiving ocean-going tankers. None is affiliated with a major integrated oil company. Members of the Association are independent marketers of No. 2 fuel oil, No. 6 fuel oil, gasoline and other petroleum products.

They distribute more than 50% of the No. 2 fuel oil consumed in New England and nearly 25% of the No. 2 fuel oil consumed along the East Coast. They distribute nearly 60% of the residual fuel oil burned by non-utility consumers in New England and nearly 50% on the East Coast.

The 16 companies own and control 56 deepwater terminals and 40 barge terminals, with a total storage capacity of more than 57 million barrels. Of the total, about 26 million barrels are for No. 2 fuel oil, about 24 million barrels are for residual fuel oil, and about 7.4 million barrels are for gasoline and other products.

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

B-209328 May 5, 1983

To the President of the Senate and the
Speaker of the House of Representatives

This letter reports a deferral in budget authority provided for the Strategic Petroleum Reserve petroleum account which should have been, but was not, reported to the Congress pursuant to the provisions of the Impoundment Control Act, 2 U.S.C.A. §§ 681 et seq. The funds involved are used for petroleum acquisition, transportation, and injection activities for the Strategic Petroleum Reserve (SPR). A total of $4.5 billion is available in the SPR account for oil deliveries in fiscal year 1983. We estimate that, at current prices, approximately $800 million in the SPR account will remain unobligated in fiscal year 1983. Our estimate of the amount deferred is based on our calculation of the amount of funds that will not be used if the President continues to fill the SPR at the current rate for the rest of fiscal year 1983 and carries out current plans to enter into contracts in fiscal year 1983 for oil delivery in the first 6 months of fiscal year 1984. Our calculations are set out in the enclosure to this report.

The Office of Management and Budget (OMB) recently submitted to our Office a memorandum addressing several issues related to the SPR fill rate. In the memorandum, OMB maintained that there are difficulties with applying the Impoundment Control Act to the SPR funds. First, our estimate of the amount deferred includes certain funds transferred by the Department of Energy (DOE) to the Defense Fuel Supply Center (DFSC), DOE's agent for purchasing oil. The funds involved are recorded as obligations by DOE upon transfer to DFSC, which is authorized to commit the funds for oil purchases as directed by DOE. In our deferral report, we include the amount of funds so transferred to DFSC that DFSC has not yet committed to oil purchases. In its memorandum, OMB argued that the effect on the funds transferred to DFSC of congressional disapproval of the SPR deferral would be unclear, because those funds already are obligated by DOE.

In our view, the Impoundment Control Act requires reporting as part of the deferral of SPR funds, the funds obligated by DOE and transferred to DFSC, but uncommitted to oil purchases. Section 1011(1)(A) of the Impoundment Control Act defines "deferral of budget authority" to include--

> withholding or delaying the obligation or expenditure of budget authority (whether by establishing reserves or otherwise) * * *.
>
> (Emphasis added.)

Accordingly, withholding or delaying the expenditure of obligated funds, like those transferred to DFSC by DOE, constitutes a deferral to the same extent as withholding or delaying the obligation of budget authority.

OMB also noted that, when a deferral is disapproved, section 1013(b) of the Impoundment Control Act provides only that the deferred funds "shall be made available for obligation." Given that the Act requires that delays in expending funds, as well as in obligating funds, be reported as deferrals, we believe that, where a deferral of obligated but unexpended funds (such as the funds transferred to DFSC) is disapproved, section 1013(b) requires that the funds be made available for expenditure.

Second, OMB suggested that applying the Impoundment Control Act to SPR funds may be inconsistent with the scheme established by the Energy Emergency Preparedness Act (EEPA), Pub. L. No. 97-229, 96 Stat. 250 (1982), the statute which imposes minimum requirements for filling the SPR. Briefly, the operative provision of EEPA requires that the SPR be filled at a minimum rate of 220,000 barrels per day, but:

> If funds are available in any given fiscal year to achieve an average annual fill rate higher than [220,000 barrels per day], the minimum required fill rate shall be the highest practicable fill rate achievable, subject to the availability of appropriated funds.
>
> Section 160(c)(1)(D)(i) of the Energy Policy and Conservation Act (EPCA), 42 U.S.C. § 6240(c)(1)(D)(i), as added by section 4 of EEPA.

In our view, the existence of the deferral of SPR funds under the Impoundment Control Act does not depend on the determination of the "highest practicable fill rate achievable, subject to the availability of appropriated funds." To the contrary, whatever is determined to be the highest practicable fill rate, if management of the SPR account results in

funds remaining unobligated, such funds should be reported to Congress as a deferral under the Impoundment Control Act. However, the fact that the minimum requirement for filling the SPR is subject to a finding of "practicability" suggests that EEPA vests some discretion in the President to determine the minimum required fill rate, by allowing him to take into account factors relating to the prudent management of the funds. According to OMB's argument, this flexibility was approved by both Houses of Congress through passage of EEPA, but, under the procedures in the Impoundment Control Act, would be overridden by a resolution of one House disapproving the deferral. In effect, the action of one House would direct the President to fill the SPR at the highest rate the funds would support, a result that may appear inconsistent with the flexibility granted by EEPA.

The prospect of the ultimate outcome described by OMB has not escaped our attention. Nevertheless, we are constrained by both the Impoundment Control Act and the EEPA, which specifies that the Impoundment Control Act is to apply to SPR funds, to conclude that a deferral report covering the SPR funds is required. OMB's observations about the interplay between EEPA and the Impoundment Control Act are more appropriately for consideration by those in Congress who must decide whether to disapprove the deferral and, in some degree, the flexibility granted by EEPA.

Finally, OMB argued that the issue of applying the Impoundment Control Act to the SPR funds is made more difficult because they are no-year funds. The Impoundment Control Act applies by its express terms to all budget authority. We are not aware of any proposition to the effect that the authority to obligate funds which extends beyond one year is not budget authority. OMB also suggests that the Impoundment Control Act is difficult to apply in the context of a statute establishing a fill rate, rather than a funding level. To the contrary, the fill rate is determined by the amount of funds available and reporting a deferral in this context is no different from reporting a deferral of funds required to be used for any other activity.

Because the executive branch has not reported this deferral, we are now reporting it to Congress in accordance with section 1015(a) of the Impoundment Control Act. The amount of the deferral represents our estimate of the amount that will not be used in fiscal year 1983, based on the information we have to date. The amount will change if the

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executive branch changes the current rate of fill or its plans to enter into contracts for oil delivery in early fiscal year 1984.

Sincerely yours,

Shelton J. Dougan

Acting Comptroller General
of the United States

Enclosure

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ENCLOSURE

SPR Petroleum Account Deferral

FY 1983 Oil Deliveries

Contract	Barrels (millions)	Cost (millions)
PEMEX I	18.3	$ 521
PEMEX II	40.3	1000
PEMEX Transportation		59
DFSC Spot	2.8	97
DFSC Long-Term	8.2	288
DFSC Spot	2.0	60
Additional Oil	8.7	261
	80.3	2,286
+6% Contingency[1/]		141
		$2,427

FY 1984 Oil Deliveries (first 6 months)
40.15 million barrels x $31.08/barrel = $1,250

Total SPR Petroleum Account Budget Resources	$4,477
Less FY 1983 Oil Acquisition	-2,427
Less FY 1984 (first 6 months)	-1,250
Deferred	$ 800

1/ Current estimates are that permanent storage capacity will support a daily fill rate of 220,000 barrels. However, the pace of development of permanent storage capacity may allow filling above 220,000 barrels. The contingency allowance represents funds that would be used to fill the increased permanent storage capacity.